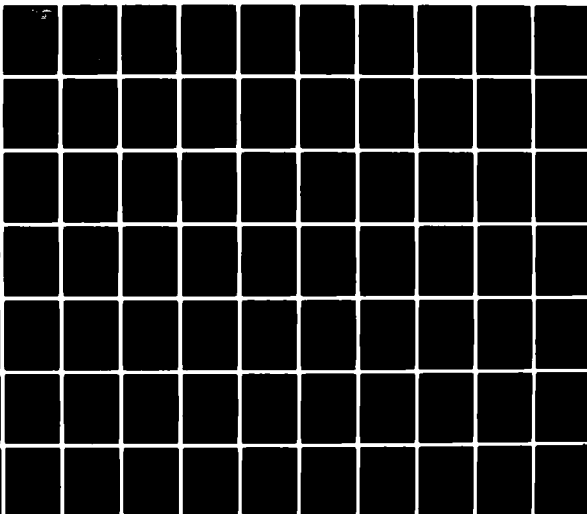


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for Air Intercept Controller
Prototype Training System

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FOREWORD

The Ordinal Syllabus for the Air Intercept Controller Prototype Training System presents training tasks to be addressed in the ordered sequence of the instructional flow for the automated adaptive training system. Whereas the preceding Behavioral Objectives and Objectives Hierarchy were job task oriented, in order to identify requisite skills for the Air Intercept Controller, the Ordinal Syllabus now addresses the sequence of instruction to be accomplished in the classroom and laboratory to develop the skills which will prepare the AIC trainee for control of live aircraft. Structuring the instructional flow places lessons within units of progressive levels of skills development. The sequencing integrates skills development with introduction to the training system and application of skills on the Training Enhancement Console. (1424)

Once again it is appropriate to acknowledge the assistance rendered by the command and staff of the Fleet Combat Training Center, Pacific, as we continue to draw upon their expertise. Their advice and recommendations, have been essential in the development of an effective system.

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SECTION I

INTRODUCTION

The Ordinal Syllabus Report documents the third step in the courseware development process for the Air Intercept Controller (AIC) Experimental Prototype Training System. This report provides a different and complementary perspective of the training task than that of either the Behavioral Objectives Report or the Objectives Hierarchy Report. Whereas these earlier reports concentrated on presenting the training tasks within the context of the AIC's job, the Syllabus presents the training tasks in the context of the instructional flow of the basic AIC course. This report will provide the important gross structure for the courseware development process. Immediately accruing from the efforts leading to this Ordinal Syllabus will be (1) development of the performance measurement variables, (2) course pretest materials, and (3) topic post-test materials. Subsequently developed will be a more detailed (1) instructional management flowchart showing the instructional pathways and (2) descriptions of the enabling objectives and types of learning associated with each instructional topic.

SECTION II

THE ORDINAL SYLLABUS DESIGN PROCESS

PURPOSE AND FUNCTION

As discussed in the introduction to this report, the Ordinal Syllabus has great importance as a baseline document for establishing the identity of the overall instructional model and the flow of the instructional content of the course. Therefore, the first step in the development process was one of precisely defining the purpose and function of the report.

The purpose of deriving the Ordinal Syllabus is to drive the delineation process in at least three areas of training system design. First, it provides impetus for identifying instructional sequencing down to the topic level for courseware development. Second, the syllabus completion requires identification of learning objectives and end-of-course standards for use in development of test materials and in identification of performance measurement variables. Third, considering the automated speech aspects of the system, syllabus development provides the first vehicle for careful incorporation of speech technology requirements into the instructional design of the system.

The function of the Ordinal Syllabus Report is to provide a means for establishing common understandings of the processes and results of the syllabus derivation. This document provides a baseline for further development of the training system. It is especially useful in this regard for the software and hardware specialists who must provide the intricate support systems required. The syllabus also provides documentation for understanding and comment by the Scientific Officer and (where appropriate) the education/training community.

NEEDS ASSESSMENT

With the purpose and function of the report delineated, the next step in the process was a reassessment of the needs that impact the courseware development. There are at least four sources of needs/constraints that affect the texture of the courseware. These are (1) the learner, (2) the training model, (3) the school, and (4) the contractor.

For the learner, the needs assessment identified four areas of concern. Two concern areas are associated with the present training system. First, the prerequisite skills are relatively undefined. This is a problem because a pretest must be devised to determine if the learners have mastered those yet undefined prerequisite skills. Second, the postgraduate skills are those of directing live aircraft in a training environment. This environment is different than the real tactical environment and requires special training during the synthetic portion of this course. One other concern area also involves special training for the learner. There are special problems involved with learner acceptance and use of systems with automated speech functions. The learner must be carefully trained to establish rapport with the system and to provide usable voice recognition data. The learner must also be trained to use the capabilities of the entire adaptive training console during his

instruction. The final learner concern is one of motivation. Since there is little external (job, peer group, status, etc.) motivation for the learner, his continuing involvement with the instruction must be enhanced by its relevance, logical flow, and built-in attractiveness.

The needs assessment of the training model identified three areas which require detailed analysis. These are the identification of comprehensive instructional strategies, the types of learning involved, and specific performance measurement variables for measuring instructional success.

Assessing the needs of the school reveals two sources of concern. The system must meet the approval of the AIC instructor staff. Their attitudes toward the system can have a great impact on its effectiveness. Moreover, the prototype training system must fit into the present training curriculum. The school is still responsible for the successful training of the personnel assigned there.

The experimental aspects of the system suggest, indeed require, special approaches to the instruction that might not otherwise be utilized. This is especially true in respect to experimentation in the area of automated speech technologies.

An assessment of the contractor's needs shows that most of the needs center around contract allocated resources and requirements. The limits on time, skill/hours available, and resource dollars require a very careful ongoing definition of the scope of the training system so as to be able to provide a feasible total instructional and experimental training system.

CONTENT SCOPE DELIMITATION

With the needs assessment completed, the next step in the syllabus development process was an identification of the instructional content scope at the topic level. This process started with a complete listing of AIC job tasks derived from available task listing resources. Next, these tasks were scrutinized and weighted according to their criticality with respect to controlling live aircraft in either the tactical or training environments. The decision on whether to include task topics into the Air Control Exerciser (ACE) training curriculum was based on a pragmatic set of three criteria:

- a. Is the task critical for controlling live aircraft?
- b. Is the task required in the contract?
- c. Is the task presently taught by the AIC school at the Fleet Combat Training Center, Pacific, (FLECOMBATRACENPAC) San Diego?

If a task met the first criterion it was included in the curriculum and will be accorded a full blown instructional handling. If a task met either the second or third criterion it was included in the curriculum but may be given either the full instructional development or may be presented on an "exposure" basis. For a listing of the tasks and the categories to

which they were assigned, refer to ACE Training Requirements (Logicon Memo ASD-79-186, attached as Appendix A).

SYLLABUS STRUCTURE DESIGN

With the content scope delineated, the chosen instructional topics were sorted according to the overall instructional/training model. The topics were categorized according to learning type, difficulty, and natural relationships.

At the same time a consensus was reached concerning the method to be used for structuring the syllabus. Several different methods were offered for discussion and were compared to the need to present instruction that was relevant, interesting, and most instructionally sound according to principles of training technology. The method decided upon was a simple instructional system development (ISD) derivative which begins by presenting the simplest, most basic skills and concepts (of air intercept control) for mastery and then builds layer upon layer of complexity and complication until the learner has mastered the entire many faceted job (of air intercept control).¹

Before any instruction about the job of the AIC can occur the student must be introduced to the job he's being trained to do, the system on which he's working, and the intricacies of working with speech recognition and understanding. Once those topics have been introduced, the learner can be advanced to the instruction dealing with becoming a qualified AIC.

The AIC must learn to control aircraft in two different environments. The first environment is the tactical arena. Here the AIC must provide the CAP with information for getting to station, making an intercept, avoiding collisions with other aircraft, making rendezvous, and making intercepts on potentially hostile aircraft and missiles.

The second environment is the aircrew training environment. Here the AIC is responsible for supplying information to the aircrews that assist them in getting to the operations area, getting proper separation distance and target aspect angles, keeping them in the boundaries of the area, helping to avoid collisions, and making pseudo intercepts.

Since the second environment includes many aspects of the first, it seemed obvious to teach the student AIC to master the skills of the tactical environment first. The first skill that is taught to the candidate AIC is how to set up the console. By teaching this first the AIC gets a chance to experience the similarities between this Naval Tactical Data System (NTDS) console simulation and the console with which he is familiar. Once this is mastered the student is ready to do his first work with radar returns and NTDS symbols.

¹ Interservice Procedures for Instructional Systems Development; 4 Vols.; U.S. Army Transportation School, Ft. Eustis, Va.; August 1975.

The most basic radar scope skill is tracking. This skill is taught next so the learner can master it well enough to make it a nearly automatic task. Next, the basic skills for getting the Combat Air Patrol (CAP) to station are taught. These include direction advisories, engaging the CAP to station, bearing and range information, and the "on station" call.

Once the AIC can get the CAP on station, the skills for initiating the intercept are taught. These skills are similar to getting the CAP to station except that now the target is moving. These include direction advisories, engaging the CAP to the bogey, bearing and range calls, and bogey track and ground speed calls. These most basic station and bogey skills are emphasized at this point in the curriculum to make them also almost automatic.

After the basic skills for getting to station and intercepting the bogey are mastered, additional associated skills are added to the skill burden. Such things as SWC and CAP check in communications, state and status reports, bogey altitude and composition calls, and breakaway and engagement results reports must be integrated so they can be done in the same time frame as the skills mastered earlier.

Once the skills associated with the straightforward single CAP, single bogey intercept are mastered, further complications are added. The learner is taught to deal with bogeys that can make evasive maneuvers, bogeys that shoot missiles, and multiple bogey raids. As these skills are learned, the learner has mastered all the skills strictly associated with the tactical environment intercept.

At this point in the syllabus the learner's attention is focussed on some more specific skills he is expected to master. The first skill set has to do with other assumed friendly aircraft flying in such a way that they present a flight safety problem. The learner is taught how to let the CAP know of their presence and how to keep track of them for the CAP until they are no longer a problem.

The second specific skill set has to do with the rendezvous of two aircraft. When two aircraft must meet up, for fueling or because of equipment problems, there is a specific means for accomplishing that meeting in a safe, cost effective manner. This set of skills is mastered and post-tested at this point in the syllabus.

The final sets of AIC skills being taught for the tactical environment concern problems with radar, the NTDS program and aircraft emergencies. After these skill sets are taught, all the skills (except rendezvous) for the tactical environment are post-tested and skill deficiencies are remediated as necessary.

Once the student has demonstrated the capacity to handle the simulated tactical environment, the skills associated with aircrew training are introduced. The main new skills are those associated with keeping the aircraft within the boundaries of the operations area, obtaining sufficient separation and proper target aspect angle between the aircraft, and getting the aircraft turned properly for the pseudo intercept.

After the last overlay of AIC skills is mastered, the learner is post-tested on them. When the learner completes this post test he is finished with the ACE curriculum.

The following step in syllabus development was to develop several (four) candidate syllabus outlines. These syllabi were then brought into discussion groups and were each assessed at length for instructional validity and learner orientation. The primary concerns during these discussions were (1) can the learner learn most effectively from this approach, (2) will this approach help keep the learner motivated to continue, and (3) will this approach complement the capabilities and limitations of the automated speech technologies? An acceptable preliminary syllabus outline was derived from this process.

At this point in the syllabus development sequence there was still one major task yet to be accomplished. This task was to identify and cross reference the learning objectives associated with the task topics in the syllabus. In most cases this was a simple relisting of objectives, including their numbers, from the Objectives Hierarchy Report.² In a few cases, because the level of the learning objective was below the scope of the Objectives Hierarchy, or because the task was specifically associated with the training environment, new objectives had to be written. These new objectives are noted as such in this report, and are included in Appendix B.

2. Objectives Hierarchy for Air Intercept Controller Prototype Training System, Report NAVTRAEQUIPCEN 78-C-0182-2 (Logicon, Inc.). Naval Training Equipment Center, Orlando, Florida; in press.

SECTION III

THE SYLLABUS SEQUENCE

The entire instructional sequence for the prototype training system (ACE) has been divided into one introductory level and seven mastery levels of achievement. These levels have been further subdivided into units and lessons. This syllabus shows the sequence and relationship between those components of the instructional flow.

The governing concept for the development of this instructional sequence has been to develop a training system which emphasizes the support role of the AIC in providing vital information to the Combat Air Patrol (CAP) and to the Ship's Weapons Coordinator (SWC) or Tactical Action Officer (TAO), and minimizes the button pushing aspects of the job. In order to have the training sequence reflect the "role rather than equipment" orientation, the introduction first presents what an AIC is and what is the importance of his role, followed by an introduction to the capabilities of the training system. Once the learner has acquired this orientation and a facility with the instructional facets of the Training Enhancement Console (TEC), he moves into the first level of instruction.

The instruction to be presented by this training system is designed to be competency-based, meaning that the learners will have to show a mastery of each topic area before being allowed to advance in the syllabus. The cognitive aspects of the AIC's role are being instructed using, as a basis, instructional concepts suggested by Gagne,³ Bloom, et al.,⁴ Merrill and Tennyson,⁵ Klahr,⁶ and Freedman, et al.⁷ The psychomotor domain skills instruction is largely based on concepts suggested by Harrow⁸ and Bilodeau.⁹ Mastery of strictly cognitive items will be tested using criterion referenced test items. Mastery of psychomotor skill items or combined cognitive/verbal/motor skill items will be tested using performance or performance oriented measurement techniques.

3. Robert M. Gagne, Conditions of Learning, 2nd Ed. (New York: Holt, Rinehart and Winston, 1970), ISBN 0-03-080330-6

4. Benjamin S. Bloom, et al., Eds., Taxonomy of Education Objectives, Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956) ISBN 0-679-20211-5

5. M. David Merrill and Robert D. Tennyson, Teaching Concepts (Englewood Cliffs, New Jersey: Educational Technical Publications, 1977) LC 76-28182, ISBN 0-87778-093-5

6. David Klahr, Ed., Cognitive Instruction (Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1975) ISBN 0-470-15225-5

7. Carol R. Freedman, et al., Author Training Course, 8 Vols (San Diego: Courseware, Inc., 1975) Materials developed for defense Advanced Research Projects Agency under ARPA Order No. 3191, Contract No. MDA 903-76-C-0216

8. Anita J. Harrow, Taxonomy of the Psychomotor Domain (New York: David McKay Company, Inc., 1972) LC 74-185136, ISBN 0-679-30212-3

9. Edward A. Bilodeau, Ed., Principles of Skill Acquisition (New York: Academic Press, 1969) LC 68-8434, ISBN 0-12-099140-3

The instruction presented by this system is also being designed to include aspects of adaptive training and generic training. The adaptive training is being addressed by a preassessment of typical learner problems with learning the AIC role. Careful design of instructional and remedial sequences can then provide a system of instruction which can adapt to different learner weaknesses and learning styles. The generic training is being handled partially overtly and partially covertly. The covert aspect of generic training is provided by the emphasis on the information support role of the AIC rather than the console manipulation skills. This will help orient the learner to the position that he is responsible for getting the vital information in a timely and accurate way, however he can get it. The overt aspect of generic training will be handled through intermittent reminders that the console NTDS program being used is like just one of many the learner may utilize on the job.

In the sections which follow, each level and unit of instruction is discussed in moderate detail. Each particular lesson is described in terms of the instructional topics introduced, course objectives introduced or tested, related AIC task objectives from the Objective Hierarchy Report, and segments used for commented practice remediation. The precise remediation pathway for each of the 84 performance measurement variables being used in the ACE system practice segments is listed here as Appendix C.

Briefly, the remediation methodology being used on the ACE system differs depending on the type of instruction being offered. For interactive teaching (IAT) segments, the tests and checks of the materials that has just been presented include feedback, retesting, and instructor intervention when the student shows continuing problems with the knowledge or skill being measured. For commented practice (CP) segments, the remediation for failure on the most recently taught information involves going through additional instruction at the IAT level. All skills that have been tested and passed in either a CP or a Free Practice (FP) are subsequently remediated by requiring the student to repeat the CP in which that skill was first tested. Skills that the student is having repeated problems with, or practice exercises where the student fails a large number of skills, are automatically handled by a referral to the human instructor. The remediation methodology being used is described in detail in the Functional Design Report.¹⁰

It is important for the reader to understand that it is not the purpose of this report to describe the actual courseware content of each lesson, but rather to outline the instructional areas of interest at each lesson. Through the courseware materials, the lessons will naturally motivate and smoothly integrate new materials with previously learned materials. The highly structured organization of the instructional system as described in this Syllabus Report will be woven into a cohesive whole when interpreted by the learner through the training system.

10. Functional Design for Air Intercept Controller Prototype Training System, Report NAVTRAEQUIPCEN 78-C-0182-8 (Logicon, Inc.). Naval Training Equipment Center, Orlando, Florida; in press.

SECTION IV

LEVEL 1 - INTRODUCTION TO THE TRAINING SYSTEM

INTRODUCTION

Learners coming into the training environment for AIC skill development will, most likely, have no experience with training systems incorporating speech recognition and voice generation features. Moreover, they may be coming into training with no real concept of the job they're being trained for and the benefits of this training. The purposes of Level 1 materials are to provide the necessary introductions to the ACE prototype training system, with special attention to speech recognition and voice generation, and to provide the learners with a global concept of the AIC's role and its importance.

Proper handling of these introductory materials is vital to the success of this system. It is here in the training that the learner's confidence in the system and acceptance of how it works are developed. This acceptance and confidence, in turn, helps the system to work.

UNIT 1 SYSTEM INTRODUCTION

This is the first of four units at this level. This unit starts by providing the learner with vital basic information about how to start using this system and what the ACE system can do. Next, the learner is introduced to the AIC's job. He is told about what an AIC does, how he does it, and what makes the job of the AIC so important.

The next set of lessons in this unit gives the learner a more detailed look at the hardware components of the ACE system. First he is told about the pieces of the Student Station and then is introduced to the Training Enhancement Console (TEC).

This unit will consist of six lessons:

- 1.1 Getting on the System
- 1.2 Introduction to the Experience Ahead
- 1.3 Introduction to the Job being Trained
- 1.4 Introduction to the Pieces of the System
- 1.5 A Quick Look at the Student Station
- 1.6 A Quick Look at the Training Enhancement Console (TEC)

UNIT 2 PRETEST

Unit 2 consists of the Program Pretest. The pretest is designed to give an indication of the level of preparedness of the AIC School candidates.

It has been designed to test the knowledge and motor skill prerequisites for entry into the school. The test is divided into five areas: (1) basic knowledge, (2) responding to Data Readout (DRO) alerts, (3) NTDS symbols, (4) action buttons, and (5) console motor skills.

This unit is comprised of one lesson (test):

1.10 Program Pretest

UNIT 3 HOW THE INSTRUCTION GOES

Unit 3 provides the learner with an introduction to the instructional system being used for ACE. The learner is provided with an introduction to the syllabus and the course objectives. The learner is introduced to the Student Guide as a basic reference and information source. Next the learner is introduced to the type of instructional segments he will encounter (interactive teaching, practices with freezes, and practices without freezes) during the instruction. Next, a discussion of diagnostics, prescription, and remediation is presented followed by a discussion of the human instructor's role.

After the learner is introduced to the instructional approach he is told of some of the special function keys available on his keyboard to assist in his work on ACE. These special function keys include the ABORT, HELP, REPLAY, BREAK, CONTINUE, BYE, YES/NO, MENU, and voice system keys.

Unit 3 is made up of two lessons with the following titles:

1.20 How the Instruction Will Proceed

1.21 Introduction (Partial) to the Special Function Keys

UNIT 4 SPEECH AND ACE

Unit 4 is dedicated to providing the learner with a working familiarity with the automated speech components of the ACE system. This unit introduces the concept of automated speech, categorizes it into talking and listening computers, and then provides some indepth background on properly training the computer.

The learner is then given a chance to actually train the computer to recognize digits. The patterns for the digits are then used as the basis for introducing the methodology for test voice recognition (Voice Test) and retraining phrases that are getting poor recognition (Retrain).

Following this extended introduction, the learner is given the opportunity to train an additional group of basic phrases (Silver Hawk, Crackerjack, Port, Starboard, Vector, Correction, Roger). Then the learner uses those phrases to do voice control of one simulated aircraft in a very simple basic scenario. The final lesson in Level 1 is used to provide a transition for the learner into the remainder of the ACE instructional sequence.

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Unit 4 is comprised of 13 lessons with the following titles:

- 1.30 Introduction to Automated Speech
- 1.31 A Listening and Understanding Computer
- 1.32 Demonstration: Training the Computer
- 1.33 Training the System on the Digits
- 1.34 Introduction to the Voice Test Function
- 1.35 Demonstration: Voice Test
- 1.36 Using the Voice Test Function
- 1.37 Introduction to the Retrain Function
- 1.38 Demonstration: Retrain
- 1.39 Using the Retrain Function
- 1.40 Using Voice in the Operational Context
- 1.41 Driving the CAP Symbol Around
- 1.42 Transition to Level 2

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 1 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION V

LEVEL 2 - BASIC SKILLS

INTRODUCTION

Level 2 materials will introduce the learner to the more fundamental aspects of this job. The topics covered here not only provide the baseline for additional learning about air intercept control, but also represent behaviors which will occur again and again throughout the instruction. Level 2 covers range and bearing reports, track and ground speed reports, and command headings.

In Level 2, these topics are introduced in a synthetic and artificial environment in order to concentrate on the underlying function being served and the basic skills being developed. The learners may have indeed previously encountered or mastered these skills in their NTDS school instruction or during on the job training, but the skills were not learned in the context of this particular billet, and they may have been learned on a different console configuration. Achieving criterion mastery of these skills during this level of instruction will allow the learner to practice them in association with the new role they are filling and with the new equipment they are using. This will also tend to allow them to relegate the mastered skills to a background level while concentrating on accumulating new skills and concepts later in the instruction.

An additional purpose behind introducing these particular topics in Level 2 has to do with the requirements associated with the speech recognition system. Level 1 provided a brief introduction to speech recognition; Level 2 now begins to apply the recognition features to the AIC training process. The vocabulary introduced here involves frequent transmissions to the CAP who must, in turn, respond. This training will meet the needs of the system to collect and validate voice reference information for those phrases which will be used constantly throughout the training and will meet the needs of the learner to develop a confidence that the system is recognizing and responding to his voice inputs.

LESSON INDEX

Level 2 is comprised of 18 lessons with the following titles:

- 2.1 Introduction to Level 2
- 2.2 Advantages of NTDS
- 2.3 Tracking the CAP
- 2.4 Tracking the CAP (CP)
- 2.5 Heading to Station
- 2.6 Bearing and Range to Station (CP)

- 2.7 Heading, Bearing and Range to Station (CP)
- 2.8 Introduction to FP 2.9
- 2.9 Heading, Bearing and Range to Station (FP)
- 2.10 Level 2, Unit 2 Introduction
- 2.11 Vectoring to the Bogey (CP)
- 2.12 Vectoring to the Bogey (CP)
- 2.13 Bogey Bearing and Range
- 2.14 Bogey Bearing and Range (CP)
- 2.15 Bogey Track and Ground Speed
- 2.16 Bogey Dope (CP)
- 2.17 Introduction to FP 2.18
- 2.18 Enroute to Station and Intercept Initiation (FP)

UNIT 1 CAP TO STATION BASIC SKILLS

This unit is comprised of training on how to track the CAP and to get the CAP on station. First the learner is taught how to track the CAP video. In this system the bogey video is tracked by a simulated tracker, but the learner is responsible for keeping close track of the CAP video and keeping the CAP symbol positioned there. The early emphasis in this unit is on the importance of accurate tracking.

Once the learner masters tracking the CAP symbol, the next instruction concerns directing the CAP to station. This includes engaging the CAP to the CAP station and giving the CAP a directional (heading) suggestion. The AIC student then learns to augment that suggestion with bearing and range calls from the CAP to the station. The emphasis here is on timely and accurate transmission of information.

UNIT 2 INTERCEPT INITIATION BASIC SKILLS

During Unit 1 the learner has been learning how to give bearing and range information from the CAP to a stationary object, the CAP station. Now in Unit 2 the AIC learns how, during intercept initiation, to give directional and bearing and range information to a moving object, a bogey. The learner is taught first how to respond to a SWC engage alert and engage the CAP to the bogey. Then he is taught how to present a directional suggestion followed by bearing and range information. For dealing with the bogey the learner is taught to supplement the bearing and range data with a bogey track and ground speed transmission. Here, again, the emphasis is on accurate and timely transmissions of information.

The final practice for this level tests the learner on his skills for first getting the CAP to the station and then getting the intercept initiated, using all the skills presented in Level 2. At the conclusion of Level 2, the practice scenarios will enable the learner to both relay mastery level command heading calls and to properly integrate those calls with the required position and velocity transmissions.

At the conclusion of Level 2, the practice scenarios will enable the learner to both replay mastery level command heading calls and to properly integrate those calls with the required position and velocity transmissions.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 2 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION VI

LEVEL 3 - SIMPLE AIR INTERCEPT CONTROL

INTRODUCTION

Level 2 of this instructional sequence was designed to provide the learner with a mastery of the NTDS console skills and radio calls most basic to the AIC's job. With a mastery of those skills the trainee can guide the CAP to a station and to a bogey. Level 2 does not, however, provide the learner with an understanding of the realistic context in which those skills must be exercised.

Level 3 materials have a two-fold purpose. First, Level 3 is designed to teach the trainee about the context of the tactical mission with an emphasis on the intercept phase of the mission. For that reason the instruction in this level proceeds chronologically from pre-check-in preparation; through check-in, enroute, and stationing; to runout, engagement, and breakaway. These are all major events associated with the AIC's main role: providing support information to the CAP and the TAO/SWC during a tactical air mission. By the end of this unit the learner understands the relationships among these events. The second purpose of this level of instruction is to add a layer of skills to the trainee's repertoire. These skills mostly take the form of proper responses to messages from the CAP and the SWC, and of relaying orders and pertinent information.

So as to not overly complicate the training environment, the practice scenarios for this level still include only the station, the CAP, and one non-jinking bogey. The trainee's task during this mastery level is to learn when to do which task and what type of information has transmission priority. At the end of this level the learner will be able to provide basic support information to the CAP and SWC liaison during all the major phases of a CAP's tactical mission.

Level 3 has 25 lessons with the following titles:

- 3.1 Introduction to Level 3, Unit 1
- 3.2 Enroute to Station Demonstration
- 3.3 Enroute to Station Challenge
- 3.4 Console Setup, Part II
- 3.5 Entering a CAP Symbol
- 3.6 Aircrew Check-in
- 3.7 Preparation/Aircrew Check-in (CP)
- 3.8 Enroute to Station

- 3.9 Enroute to Station (CP)
- 3.10 Transmitting Bearing and Range to Station and Reporting On Station
- 3.11 Enroute To/On Station (CP)
- 3.12 Introduction to FP 3.13
- 3.13 Preparation/Enroute to Station (FP)
- 3.14 Intercept Initiation Demonstration
- 3.15 Challenge: Runout
- 3.16 Runout
- 3.17 Runout (CP)
- 3.18 Introduction to FP 3.19
- 3.19 Runout (FP)
- 3.20 Engagement/Breakaway Demonstration
- 3.21 Engagement/Breakaway Challenge
- 3.22 Engagement/Breakaway
- 3.23 Engagement/Breakaway (CP)
- 3.24 Introduction to FP 3.25
- 3.25 Engagement/Breakaway (FP)

UNIT 1 ENROUTE TO STATION

This unit first deals with the tasks the AIC must accomplish to make himself ready to provide useful support information to the TAO/SWC and his assigned CAP(s). In this unit the AIC trainee is first introduced to the steps for gathering the background data concerning the present tactical environment. He can use this information to understand the day's "game plan" for his portion of the tactical arena. Next, the trainee receives instruction on setting up the NTDS console for normal Air Control (AC) mode operation. Finally, he learns how to set in the important parameters associated with the aircraft he will be assisting. Especially important are entering the CAP symbol and selecting and entering the bank angle in anticipation of check-in.

The preparation skills are important because they will help the learner better understand how he is assigned a CAP and how that CAP is to be tactically employed. This understanding will make the subsequent check-in procedure contextually easier to comprehend.

The instruction next focusses on the skills used when the CAP first checks-in for assignment as a part of the ship's weapon system. The unit is subdivided into three lessons, each associated with the three principals involved: the CAP, the NTDS, and the SWC.

The learner is first taught to locate his assigned aircraft and establish a communications link via a radio check. He then queries the aircrew to determine fuel state and weapon status. Next, the NTDS program is updated by associating the (previously entered) CAP symbol to the aircraft video, and updating the state/status information. Finally, the SWC is notified that the CAP is assigned to the ship, with given fuel and weapons.

For all instructional tasks in this unit, as for most tasks at this level of achievement, the learner's attention is drawn specifically to the reasoning behind the order in which the tasks are done. The instruction is designed to enhance the decision making process.

At this point in the instruction the CAP is checked in but has not been assigned or directed to station. The rest of this unit covers the skills associated with getting a CAP to its assigned station. At this point, the learner gets an excellent chance to apply the tracking and simple vectoring skills learned in Level 2.

In addition, however, the learner is introduced to the NTDS concepts of engagement and data link operations. The trainee will learn, for example, that when his CAP is "engaged" to a point (or other symbol), that his (the trainee's) activities are further simplified by having position data appear on the display next to the engaged CAP symbol. Moreover, information is sent directly to the aircrew via data link if this system is operational.

Included in this unit is a general discussion on the content and use of weather reports.

This unit finishes the chronological development of intercept control with the CAP arriving at station. The learner is taught the necessary interactions between himself and the CAP, the SWC, and the NTDS. The AIC trainee is taught to observe the tactical environment and search for bogey appearances, and to relay this information to the CAP and SWC.

UNIT 2 RUNOUT

The units handle the transition from one phase (stationing) of the tactical mission to another phase (intercept) and the runout. This transition is emphasized because it is important that the AIC trainee understand that he cannot engage the CAP to a target until he receives an engagement order from the TAO/SWC. The first new instruction in this unit is composed of relaying the engagement order from the SWC. Previously learned skills, which are reviewed and expanded upon in this unit, are engaging the CAP to target and recommending a heading for nearest collision intercept.

The learner has mastered the skills for generating bogey dope and for making the associated transmissions in Level 2. In this unit he next reviews

those skills in a more "authentic" environment and adds some communications skills. First, he learns to relay SWC termination orders to the CAP; second, he learns to keep the SWC updated on the probability, or rather the improbability, of the intercept; and, third, he learns to stop calling bogey dope after a "judy" or a "tally ho" from the aircrew.

UNIT 3 ENGAGEMENT AND BREAKAWAY

The highly synthetic intercepts of Level 2 did not deal with the skills and concepts associated with the engagement phase of the intercept. The learner, who has brought the intercept to this point, is now in a position to better understand what happens next. This unit first presents the communication to the SWC notifying him of the engagement and the communication to the CAP each minute about how long the engagement has gone on. As long as there are only two aircraft in the fight, these are the only engagement skills the AIC needs.

There are a number of reasons a CAP would breakaway from an engagement: low fuel state, successful kill, reassignment, etc. Whichever the reason, the AIC must learn to get the CAP out of the engagement and headed somewhere in particular. This involves interactions with the CAP and the NTDS program. The AIC must also keep the SWC apprised of what's going on. The lessons in this unit teach all of those breakaway skills and concludes this level of achievement.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 3 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION VII

LEVEL 4 - HOSTILE AIRCRAFT COMPLICATIONS

INTRODUCTION

During the two previous levels of achievement, the learner's attention has been focused on mastering the skills associated with providing support data for the CAP and the SWC during a tactical mission. Level 2 illustrates the most basic skills for providing position and velocity data, culminating in a skeletal intercept. Level 3 adds a knowledge of the tactical mission context and skills for providing additional information about the situation. In both of the previous levels, the environment has been severely restricted to focus the learner's attention on the specific skills and concepts being trained. Level 4 adds another layer of realism to the learner's practice environment by adding a set of complexities associated with hostile aircraft. These complexities involve both a single bogey and a multiple hostile aircraft environment.

The single bogey complexities are presented first inasmuch as they are a natural extension of the learner's previous training. In the two previous levels, the learner has dealt with a "dumb" bogey. No matter what happens, that bogey flies a straight path. Now the learner must deal with a "smart" bogey that can respond to the threat posed to it by the CAP. The trainee learns the skills required to counter those evasive maneuvers, called "jinks".

Next, the trainee learns to look for and detect additional bogeys, especially bogeys which appear from what has been a single radar return. The trainee learns how to help his CAP by keeping track of the other hostiles that might pose a threat to the CAP.

LESSON INDEX

Level 4 has 20 lessons with the following titles;

- 4.1 Introduction to Bogey Jinks
- 4.2 Detecting and Calling a Jink
- 4.3 Detecting and Calling a Jink (CP)
- 4.4 Countering the Bogey Jink
- 4.5 Detecting and Countering the Bogey Jink (CP)
- 4.20 Introduction to FP 4.6
- 4.6 Detecting and Countering Bogey Jinks (FP)
- 4.7 Introduction to Splits
- 4.8 Detecting and Responding to Splits

- 4.9 Dealing with the Split
- 4.10 Dealing with the Split (CP)
- 4.11 Dealing with the Missile Platform
- 4.12 Introduction to FP 4.13
- 4.13 The Whole Split Sequence (FP)
- 4.14 Composition and Incorrect Contact Calls
- 4.15 Bogey Composition
- 4.16 Incorrect Contact Calls
- 4.17 Composition and Contact Calls (CP)
- 4.18 Introduction to FP 4.19
- 4.19 Multiple Bogeys (FP)

UNIT 1 BOGEY JINKS

The learner's previous experience in this training has been with a bogey that drives straight in. The training has been restricted to that type of bogey so the learner could concentrate on other skills. Now, with those skills mastered, the trainee is ready to learn how to counter a bogey that can maneuver (jink) to avoid being "killed". Before the learner can deal with a bogey jink, however, he must know one when he sees one. This unit, therefore, commences by teaching the trainee to recognize heading and groundspeed jinks on the PPI and to make the associated R/T transmission to inform the CAP. Next, since the bogey is going someplace new, the AIC must tell the CAP where and recommend headings to get there. Thus, the trainee now learns to obtain and transmit revised headings and bogey dope. Finally, because the new direction the bogey is going may make it a better target for ship's missile fire rather than the CAP's armament, the trainee is given a brief exposure to CAP/missile coordination.

UNIT 2 BOGEY SPLITS

This unit deals with new skills and a different environment than any the trainee has thus far encountered. Here we add new radar returns for him to deal with. Previously, the learner has only had the CAP and the (single) bogey (and the station) to keep track of. Now he finds out about the problems associated with multiple hostile aircraft.

Since the trainee had dealt with a single bogey, bogey splits provide a natural transition from the single hostile to the multiple hostile environment. The trainee learns how to look for and detect new returns and how to inform

the aircrew and the SWC of the new threat. The trainee is instructed on identifying and reporting the priority threat.

Once the bogey split skills are mastered, the learner has acquired the skills prerequisite to training concerning mass raids, composition, and responding to aircrew requests for bogey dope on other hostiles in the neighborhood. The rest of this unit teaches the learner the new skills specific to those topics.

UNIT 3 BOGEY COMPOSITION AND CONTACT CALLS

The final unit and lesson in this level concerns itself with other skills associated with multiple hostile aircraft. This includes some specific training on how to call multiple bogies and how to deal with incorrect contact calls.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 4 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION VIII

LEVEL 5 - MULTIPLE FRIENDLY AIRCRAFT

INTRODUCTION

The instruction presented in the previous three levels has dealt with a tactical environment where there is only one "good guy", the CAP, and one or more "bad guys". In reality, however, there are likely to be some of each, and the trainee must learn how to know who is who, and how to respond to the presence of additional friendly aircraft. This level of instruction is designed to teach the learner the skills for determining who are the friendlies and for CAP control in a multi-aircraft environment. Thus, the learner is trained in skills of detecting and reporting other friendly aircraft and the proper responses to their presence in the tactical picture.

LESSON INDEX

Level 5 is comprised of 11 lessons with the following titles:

- 5.1 Strangers
- 5.2 Reporting Strangers
- 5.3 Initial Strangers Reports (remediation only)
- 5.4 Stranger Calls (remediation only)
- 5.5 Stranger Track and Angels
- 5.6 Stranger Track and Angels (remediation only)
- 5.7 Stranger Opening/Visual Calls
- 5.8 Stranger Opening Call (remediation only)
- 5.9 Strangers (CP)
- 5.10 Introduction to FP 5.11
- 5.11 Strangers (FP)

UNIT 1 STRANGER REPORTS, TRACK AND ANGELS

In this unit, training is extended to detecting and reporting unidentified assumed friendlies (strangers) to the CAP. After the strangers or friendlies are detected, the AIC must keep track of them for the CAP and report their positions (including altitudes) and velocity if they can possibly be a problem to the CAP. This unit presents instruction on those tracking, reporting, and response skills necessary to keep the additional friendly aircraft from being a problem.

During this level, the tactical radar/symbology display environment develops into the more realistic representation of actual conditions. The synthetic conditions established during Level 3 are now a thing of the past. The AIC trainee is performing all of the skills acquired to date, in highly realistic scenarios.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 5 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION IX

LEVEL 6 - RENDEZVOUS

In the previous levels of instruction the learner has dealt with the aspects of the tactical mission through the breakaway and has experienced multi-aircraft environments. As the CAP breaks away from the engagement, he may need to join up with another aircraft for one of several reasons: to face a new threat, to obtain fuel (tanking), to have another aircraft protect him because of a debilitating emergency, etc. This level presents a set of basic join-up skills required for any sort of rendezvous situation.

The only really new skills to be learned at this level are those associated with the widget. In most cases previously learned skills will be used in a slightly different manner. Previously, the learner has given all heading and position information from some point of reference to the CAP. In this level the same type of information is transmitted to a joining aircraft using the CAP as the point of reference. The trainee must learn to use the console to provide him with this basic information from the new point of reference.

Tanking is a special case of rendezvousing, and the learner is exposed to the associated skills in a discussion format.

LESSON INDEX

Level 6 has 13 lessons with the following titles:

- 6.1 Introduction to the Rendezvous
- 6.2 Initial Calculations
- 6.3 Establish the LSL
- 6.4 Turning the MAC onto the LSL
- 6.5 Turning the MAC onto the LSL (CP)
- 6.6 Transmissions Before the Rendezvous Turn
- 6.7 Getting the Aircraft to the Rendezvous Turn
- 6.8 Turning the MAC for the Rendezvous
- 6.9 Transmissions to Complete the Rendezvous
- 6.10 Making the Turn for Rendezvous, I (CP)
- 6.11 Making the Turn for Rendezvous, II (CP)
- 6.12 Repeat Rendezvous Demo
- 6.13 Performing the Rendezvous (FP)

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 6 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION X

LEVEL 7 - PROBLEMS ENCOUNTERED IN AIR INTERCEPT CONTROL

INTRODUCTION

Previous levels of instruction have all dealt with normal, positive aspects of providing support information during a tactical air mission. This level presents training on the skills required when something goes wrong or problems crop up.

The types of problems have been roughly categorized into equipment problems and mission problems. Equipment problems include radar fades (in the dark), losing the NTDS program, and electronic countermeasures (jamming). Mission problems include surface to air missile warnings and emergencies.

This instruction is presented at this point in the training sequence because the learner has mastered all of the tactical environment skills required of him if nothing goes wrong. He is now, with his confidence in his competence, more capable of adding the stresses and frustrations associated with problems. He is also more capable of understanding the ramifications of those problems.

LESSON INDEX

Level 7 has 22 lessons with the following titles:

- 7.1 Introduction to Radar Fades
- 7.2 Calls Used with Radar Fades
- 7.3 After "In the Dark" Calls
- 7.4 Radar Fades (CP)
- 7.5 Introduction to FP 7.6
- 7.6 Radar Fades (FP)
- 7.7 Introduction to NTDS Failure
- 7.8 Responding to NTDS Failures
- 7.9 NTDS Down: Bearing and Range
- 7.10 NTDS Down: Bearing and Range (CP)
- 7.11 Dead Reckoning
- 7.12 NTDS Down (CP)
- 7.13 Introduction to FP 7.14

- 7.14 NTDS Down (FP)
- 7.15 Introduction to Emergencies
- 7.16 Detecting Emergencies
- 7.17 Assisting the Aircrew During an Emergency
- 7.18 Emergency (CP)
- 7.19 Introduction to FP 7.20
- 7.20 Emergency (FP)
- 7.73 Tactical Environment (I) (FP)
- 7.74 Tactical Environment (II) (FP)

UNIT 1 RADAR FADES

This unit is designed to teach the learner what radar fades look like and what to do when they happen. The trainee is further instructed on using IFF equipment to help him with his tracking and learns the rules associated with making "in the dark" calls to the CAP.

UNIT 2 NTDS PROGRAM FAILURE

In this unit the learner can harken back to the training he received at the very beginning of Level 2. There he learned to do his tracking and estimating of bogey dope himself, with no help from the system. In this unit he will review those skills, but first he will learn how to readjust the NTDS console for operation in the casualty mode.

UNIT 3 EMERGENCIES

The things an AIC does to deal with an emergency are fairly simple. Within the ACE training environment, he relays the emergency status to the SWC and, depending on whether the aircraft is still airborne, keeps track of the aircraft. Communications with search and rescue units will be discussed, but not simulated. The AIC will, however, be asked to plot the A/C location at the time the beeper on guard goes off.

The problems for the AIC are recognizing that an emergency is occurring, identifying precisely what kind of an emergency it is, and staying calm. For that reason this unit starts with a discussion of the types of emergencies and how to detect and identify them. This is followed by instruction on using the radio or Information Friend or Foe (IFF) to recognize specific common emergencies. Once the learner has mastered the emergency detection skills, the instruction continues on to the associated communication and console skills.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 7 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

SECTION XI

LEVEL 8 - TRAINING SET-UPS

INTRODUCTION

The previous levels of instruction have been training the learners for coping with the real tactical environment. This level provides training for the "live" training that happens next at AIC School.

During "lives" the trainee will be asked to provide support to F-4 and F-14 aircrews. It is the trainee's role to set up intercepts for practicing aircrews and then provide support to the aircraft which has been designated as the CAP. In this way one event can provide training for persons doing two different jobs. Unfortunately, setting up the intercept involves AIC skills which are never used outside the training environment and means utilizing the NTDS system in a way for which it was not intended, to get vector, position, and velocity data for both participating aircraft.

This level of instruction presents those skills specific to the task of setting up intercepts to the training environment. It is placed here in the syllabus because (1) the learner will have mastered all the skills relevant to the tactical environment and is less likely to be confused by these new non-tactical skills; and (2) the very next training he will do will use these specific skills. The instruction covers getting everything ready for the training, getting the aircraft separated properly for their practice, turning the two aircraft toward each other, and providing support information to the designated CAP.

LESSON INDEX

Level 8 has 22 lessons with the following titles:

- 8.1 Introduction to Setups and Area Control
- 8.2 Intercepts Part 1, Head On Intercepts
- 8.3 Intercept, Part 1 (CP)
- 8.4 Intercepts, Part 2 - Equal Distance Runout and Getting Out of Holes
- 8.5 Enroute to the Area
- 8.6 Aircrew Checkin
- 8.7 Lost Communications
- 8.8 Detach the Wingman
- 8.9 Intercept, Part 2 (CP)

- 8.10 From Preparation to Judy (FP)
- 8.11 Super Setups: Adjusting Aspect Angle (TAA) and Separation
- 8.12 Super Setups: Adjusting TAA and Separation (CP)
- 8.13 Running Super Setups, Set 1 (FP)
- 8.14 Running Super Setups, Set 2 (FP)
- 8.15 Running Super Setups, Set 1 (FP)
- 8.16 Running Super Setups, Set 2 (FP)
- 8.17 Running Super Setups, Set 3 (FP)
- 8.18 Running Super Setups, Set 4 (FP)
- 8.19 Running Super Setups, Set 5 (FP)
- 8.20 Running Super Setups, Set 6 (FP)
- 8.21 Running Super Setups, Set 7 (FP)
- 8.65 End of Course Summary

UNIT 1 INTRODUCTION TO HEAD-ON INTERCEPT SETUPS AND TAIL-TO-TAIL BREAKAWAY HEADINGS

This unit concentrates on the skills associated with the operating area. This means teaching the concepts of area control and the new skills associated with getting the required separation and aspect angle for running the mock intercept. These skills are taught first because they are most closely associated with the student AIC's previous skill development.

UNIT 2 HEAD-ON INTERCEPTS FROM PREPARATION TO JUDY

This unit deals with the skills associated with getting the two participating aircraft to the operating area and getting them detached for the initial setup. The skills being taught include vectoring to the center of the area, getting state reports, establishing lost communications protocol, and detaching the wingman.

UNIT 3 SUPER SETUPS, ADJUSTING TAA AND SEPARATION

There are quite a variety of setups the student will have to accomplish. This unit teaches the student how to vary the separation and aspect angle as required. These are the last skills taught in this syllabus.

UNIT 4 SUPER SETUPS (HIGHER STANDARDS)

Since the student's next two to three weeks of training will be comprised of doing setups in a live environment, this last unit gives him a chance to practice in an increasingly more demanding training environment. The standards for passing and the aircraft model proficiencies are modified to make successive practice sets increasingly difficult.

LESSON OUTLINES AND RELATED OBJECTIVES

The lesson outlines for Level 8 are presented in Appendix D. The related objectives from the Behavioral Objectives Hierarchy are presented in Appendix E.

NAVTRAEQUIPCEN 78-C-0182-3

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APPENDIX A

ACE TRAINING REQUIREMENTS

LOGICON

INTEROFFICE CORRESPONDENCE

TO: AIC Notebook, Section 2
FROM: M. W. Grady *mwg*
SUBJECT: ACE Training Requirements

DATE: March 15, 1979
NO: ASD-79-186
DISTRIBUTION: (Revision of ASD-79-153)
AIC Project Staff

THIS MEMO REVISES THE ONE PUBLISHED 3/5/79

This memo establishes the task areas to be addressed by the AIC Experimental Prototype Training System (ACE). The content of this memo was derived after:

1. Reviewing the entire job of the AIC, based on Appendix A of the Behavioral Objectives Report and some notes by Larry Nowell.
2. Reviewing the "terminal learning objectives" of the AIC course described in 77-M-1058-1.
3. Internal Logicon discussion (see, for example, ASD-79-087).
4. Discussions with FCTCP (see, for example, ASD-79-123).
5. Reviewing the Basic and Alternate AIC proposals submitted by Logicon to NTEC.
6. Reviewing the negotiated AIC contract.
7. Discussions with Robert Breaux.

The following pages present four task areas for which we will and will not produce instructional material. Category A Tasks include those items for which we will provide:

- computer managed instruction via CRT's, printer, audio/visual media, computer generated speech, etc.
- objective performance measurement
- automated evaluation, diagnosis and feedback
- relevant aircraft/aircrew, radar, NTDS, IFF, etc. simulations
- special training console instructional aids

The intention is to provide intensive instruction and practice opportunities to the student for Category A Tasks.

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Category A Tasks will utilize the system's capabilities to provide Interactive Teaching, Commented Practice, and Free Practice (c.f. ASD-79-115 and ASD-79-117).

Category B Tasks will also be presented to the student using the student's CRT, printer, and audio/visual media. The system will not, however, provide performance measurement, simulation, speech technology, etc. The intent here is to "expose" the student to Category B Tasks, rather than provide fully automated, intensive training. As such, only a subset of Interactive Teaching will be used, with no Commented or Free Practice runs. The extent of the exposure or teaching will be based upon our best judgment of instructional importance traded-off against resources available to the courseware staff.

Looked at another way, Category B Tasks will be presented in relatively traditional formats. These will not add to the experimental, R&D aspects of the prototype system. Rather, they are included in this system for the educational benefit of those students who will be exposed to this (primarily) research-oriented system, vis-a-vis students who go through the conventional synthetics portion of the AIC course.

Category C Tasks will not be addressed by the experimental prototype training system. Unfortunately, however, these tasks are considered important (by Logicon) in terms of improving upon the total instructional presentations given to the AIC trainee. More specifically, exposure to these tasks would provide the student with a more complete and cohesive picture of his job as an AIC in the fleet. Nevertheless, these tasks are not within the previously contracted scope of this experimental prototype. We may, therefore, recommend to WTEC a contract modification to move these Category C Tasks into Category B status. But until such a modification is agreed upon, the "official" position is that ACE will not address these tasks.

Category D Tasks will also not be addressed by the experimental prototype. These tasks are agreed to be prerequisite knowledge that the student must have prior to entering the AIC school. To the extent that these tasks are essential for utilization of ACE, they will be tested in our Pre-Test. The Student Guide might briefly review these tasks and provide short recap's of relevant procedures; but--because they are prerequisite behaviors--no training of these tasks will be provided by the hardware/software/courseware system. Moreover, as prerequisites, these tasks are outside the scope of the prototype training system's contract.

It should be noted here that Larry Nowell questions whether or not all entering students really will have solid knowledge of these tasks. If they do not, and hence do not pass our Pre-Test, they will require instruction from the school's staff prior to working with ACE. Alternatively, WTEC may request that we distribute these tasks into Category A or B. But, again, this will require contract modification.

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Other tasks were considered for placement into the other categories, but they do not belong. That is, these are tasks which

- ACE will not address
- ACE need not address
- will be learned elsewhere ("Live's," QJT, etc.)

CATEGORY A TASKS

The tasks in Category A can be divided into five sets. See the figure. Tasks 1 through 5 are associated with equipment operations and--conceptually--are intended to extend the basic knowledge and skills prerequisite to entry to the AIC School (Category D Tasks). There is undoubtedly some overlap between these tasks and Category D tasks.

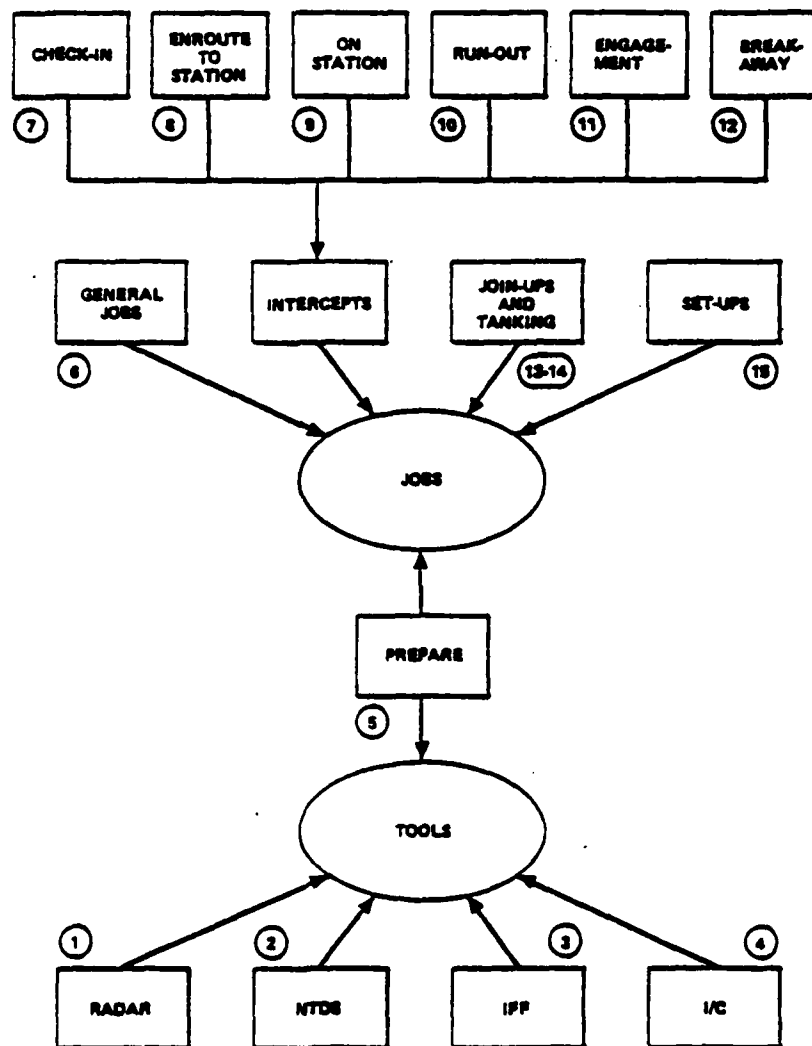
Task 6 represents general AIC control procedures. It is sort of a catch-all location for AIC tasks which are independent of the tactical/training environment, or intercept phase.

Tasks 7 through 12 represent, in sequence, the AIC's jobs performed when controlling A/C to intercept a bogey.

Tasks 13 through 14 cover tanker/friendly join-ups.

Task 15 covers the so-called training environment.

1. Operate a UYA-4/V-10 console without the NTDS program, as applied to air control, to perform the following tasks.
 - a. Estimate magnetic bearing and range from a CAP to a target using the azimuth ring and range aids.
 - b. Compute bogey track and ground speed using grease pencil and plotting techniques.
2. Operate a UYA-4/V-10 console with the NTDS Model 4.0.1 program, as applied to air control. The following list itemizes many NTDS functions which are also included in Category D (prerequisites). Basic training will not be included for these functions. But the role of these functions within the context of the jobs defined in this category will be trained. For example, the student will be expected to know (and demonstrate in the pre-test) how to update a CAP's fuel state and weapon status in NTDS. We will teach him when to do this: at station, during run-out, etc. It is important to clearly understand the demarcation between this list and the items in Category D. The operative phrase is "as applied



CONCEPTUAL ORGANIZATION OF CATEGORY A TASKS

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to air control". We are not expected to provide basic instruction on the items noted in Category D. These items are listed below because we must provide for their simulation. Performance measurement is done on the jobs (tasks 6-15), not the button-pushing common to Category D. Please give me some feedback if this distinction is not clear. 'Nuf said.

For easy reference to R. Granberry's (classified) memo SD-3387, Amended, I will use his numbering scheme:

1. Category Select Panel
2. Range Switch
3. CRT Center Switch
4. Enter Offset
5. Enter Mode and Radar
6. Point
7. Ball Tab Center
8. Ball Tab Enable
9. Hook
10. Sequence
11. Drop Track
12. Track Number Callup
13. Enter SIF Code
14. Enter Height
15. General Purpose Function Code
- 15A. FC XX003-Addressed Lines, Delete All
- 15B. FC XX103-Addressed Line, Enter Origin
- 15C. FC XX203-Addressed Line, Enter Termination
- 15D. FC XX303-Addressed Line, Enter Origin and Termination

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- 1SE. FC XX403-Addressed Line, Delete Selected
- 1SF. FC XX363-Place Track on Sequence List
- 1SG. FC XX463-Remove Track from Sequence List
- 1SH. FC XX543-Assume Control
- 1SK. FC LMT56-Enter Track Status
- 1SL. FC HFT58-Display/Update Fuel
- 1SM. FC WTQ59-Display/Update Weapons
- 1SN. FC DO155-Specify Bank Angle
- 1SP. FC XX461 Pair/Delete Pair to Ball Tab
- 1SU. FC XF457-Enter Console Function
- 1SX. FC XX661-Display/Delete Link-4A Address Readout
- 1SY. FC XX061-Enter Homeplate
- 1SZ. FC XXX98-Enter Cap Station
- 1SBB. FC XXX97-Position PP100
- 16. UP/LOW LABELS
- 17A. DRQ SEQ
- 18A. BRK/CANVCO
- 18B. ACPT/DEL
- 19. ALERT SEQ
- 20. HOOK
- 21. BALL TAB
- 22A. HDG/SPO/ALT
- 24B. FUEL/MSL

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- 25. DN/LPT
- 26. UP/RT
- 27. POSCOR/STDX
- 28A. GEOM
- 28B. WAYPOINT
- 29A. ORD SEND
- 30A. EMG ORD
- 30B. NEW TRK
- 31A. SEQ ORD
- 31B. AMP SYMBOLS
- 32A. NEW CAP
- 3. Operate the UPA-59A IFF unit as applied to AIC operations to support the following tasks:
 - a. Locate and identify A/C.
 - b. Assist in tracking A/C.
 - c. Obtain height data.
 - d. Recognize emergencies via IFF returns.
- 4. Operate the (verbal) communications gear to transmit information to the aircrews, TAO/SWC, or others; as needed to support other tasks in this category.
 - a. Utilize correct vocabulary (brevity codes). This is to be expanded.
 - 1) C/S radio check
 - 2) C/S mark your TACAN
 - 3) C/S say lost communications intentions
 - 4) C/S

<div style="display: inline-block; vertical-align: middle;"> { vector port starboard port hard starboard hard } </div>	XXX	<div style="display: inline-block; vertical-align: middle;"> { as bogey for bogey for the area for separation for breakaway } </div>
--	-----	--

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- 5) C/S { detach port
 detach starboard
 continue
 breakaway } XXX
- 6) C/S anchor { port
 starboard }
- 7) C/S { tighten } turn
 ease
- 8) { Bogey } XXX,YY
 { Stranger }
- 9) { Bogey } Tracking XXX, speed 1
 { Stranger }
- 10) Bogey jinking { left
 right }
- 11) Roger that is your bogey, tracking XXX
- 12) Negative your bogey XXX,YY
- 13) Stranger opening
- 14) Say again
- 15) Correction
- 16) Over
- 17) Out
- 18) Roger

Note: This list will be expanded. It is by no means complete.

- b. Apply the rules for clarity.
- c. Observe rules of circuit discipline.
5. Perform the following duties in preparation of assuming your position as an AIC:
 - a. Prepare yourself mentally
 - b. Set up the UYA-4/V-10 console
 1. for use with WTDS
 2. for use without WTDS
 - c. Set up the UYA-59A unit.
 - d. Set up voice communications equipment

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6. Perform the following duties whenever controlling aircraft:
 - a. Keep the A/C on the scope via the offset and/or range scale functions
 - b. "Track" the A/C; that is, keep the symbol(s) positioned properly on the video, and update the heading, speed, and altitude as required. (Although this is in Category D as well, its importance to air control cannot be overestimated. I repeat it here purposefully.)
 - c. As appropriate, outline the operating areas on the PFI and provide the aircrew with headings to stay within the area.
 - d. Note hazardous zones in the area, outline on the PFI, and provide headings to avoid these areas. Enter waypoints as required when traversing these areas.
 - e. Detect and report to the aircrew other aircraft appearing in the area. These A/C include:
 1. additional friendly A/C
 2. additional hostile A/C
 3. strangers: unknown A/C, presumed friendly
 4. bogeys: unknown A/C, presumed hostile
 - f. Respond to the following aircrew communications:
 1. "Visuals" on other A/C
 2. requests for bogey dope on other A/C
 - g. Be alert for A/C emergencies, as determined by aircrew transmission (IFF or voice); in event of any emergency:
 1. maintain track or position of aircraft
 2. notify the TAO/SWC
 3. provide headings to homeplate
 4. provide bearing/range to homeplate
 5. Plot position of crash or bailout if that occurs, and notify SAR units
 - h. Transmit "in the dark" calls when radar video fades.

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- i. Monitor A/C fuel state and weapon status. Revise the WDS program as required. Keep the SMC informed of this information.

Note: The following tasks refer to a "one-way data link equipped aircraft." Since the data-link system may be inoperable, voice transmissions is included as a subset of these tasks, and will always be provided as a back-up.

7. Perform the following duties to establish initial communications ("check-in") with one-way data link equipped aircraft:
 - a. Locate your assigned aircraft
 - b. Build the CAP symbol
 - c. Establish a communications link (data link and/or voice) with the aircraft.
 - d. Notify the SMC that the CAP has been assigned as an additional weapon to the ship
 - e. Select the desired bank angle and other relevant A/C parameters and enter this information into the WDS
8. Perform the following special duties while controlling one-way data link equipped aircraft enroute to a (predefined) station:
 - a. Assign the CAP to a station
 - b. Vector A/C to station
 - c. Provide bearing and range information from CAP to station
9. Perform the following special duties while controlling one-way data link equipped aircraft on station:
 - a. Disengage the CAP symbol from station
 - b. Notify the SMC that the CAP is on station
 - c. Monitor the tactical environment in terms of bogey appearances and notify the SMC/TMO
 - d. Wait for an engagement order from the SMC and relay to the aircrew
 - e. Recommend a heading for a Wearest Collision Intercept (WCI)

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10. Perform the following duties while controlling one-way data link equipped aircraft during an intercept run-out:
 - a. ensure bogey is being tracked accurately
 - b. transmit magnetic bearing and range from CAP to bogey
 - c. transmit track and ground speed of bogey to CAP
 - d. transmit bogey altitude information to CAP
 - e. transmit bogey splits, and maintain track on all aircraft; recognize and respond to the priority threat
 - f. detect and report bogey jinks (heading, speed, altitude) to the CAP
 - g. determine new intercept geometry as required and transmit revised headings to the CAP
 - h. respond to the following, communications from the aircrew:
 1. contact
 2. judy
 3. lost contact
 - i. keep the SMC/TAO informed of the following
 1. probability of intercept
 2. splitting bogeys
 - k. relay the following to the CAP from the SMC/TAO:
 1. intercept termination orders; that is, how this intercept should terminate: kill, visual, etc.
 2. break-off the intercept
11. Perform the following duties while controlling one-way data link equipped aircraft during an engagement with a hostile aircraft:
 - a. notify SMC/TAO of the engagement
 - b. notify the TAO/SMC of the results of the intercept provided by the aircrew

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12. Perform the following duties while controlling a one-way data link equipped aircraft on the return (breakaway) phases of an intercept:
 - a. determine a recommended heading for breakaway
 - b. transmit the breakaway heading to CAP and notify the SMC/TAO
13. Perform the following tasks to "join-up" two friendly aircraft; assume that one aircraft is in orbit on station
 - a. relay altitude of on-station aircraft to joining aircraft
 - b. determine heading for join-up and transmit to the joining aircraft
 - c. provide range and bearing from on-station aircraft to joining aircraft
 - d. respond to aircrew's report that the on-station A/C is in sight
14. Perform the following tasks if the "on-station aircraft" in item 13 (above) is a tanker, and the "joining aircraft" is to be refueled:
 - a. recommend a heading to the tanker to turn in front of the joining A/C
 - b. determine tanker is sweet (has fuel) and is basket capable (able to receive the CAP)
 - c. notify the SMC/TAO when the joining CAP is tanking
 - d. notify the SMC/TAO when tanking is complete
 - e. request the tanker's giveaway
15. Perform the following special duties related to assisting in aircrew training; the aircraft may or may not be one-way data link equipped.
 - a. determine the aircrew lost communications protocol
 - b. if the two aircraft are flying in formation, detach the wingman when they reach the training area
 - c. determine:
 - o planning bearing
 - o target aspect angle
 - o angles off
 - o track crossing angle

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d. plot:

- e. "bogey's" heading and reciprocal
- e. "CAP's" heading
- e. planning bearing
- e. Turn the "bogey" and the "CAP", and then
- f. conduct a pseudo-intercept as defined in tasks 8 through 12

CATEGORY 2 TASKS

1. Recognize and transmit bogey compositions and formations.
2. Perform the following tasks related to the engagement phase of an intercept (Air Combat Maneuvers - ACM):
 - a. update the TAO/SWC on progress of the engagement; recognize and relay to the SWC various code words, or jargon from the CAP, such as "burner," "pedlock," "press him," etc.
 - b. transmit the time of engagement every minute to the CAP
 - c. notify the CAP if A/C enter or leave the fight
3. Transmit information on weather conditions to the CAP and request weather reports and flight conditions.
4. Perform the following tasks related to emergencies:
 - a. recognize emergency pro-words.
 - b. identify different types of aircrew and aircraft emergencies
 - c. assist in emergencies as able; work with search and rescue units
5. Provide assistance to aircrews while experiencing radar and/or radio jamming. Notify TAO/SWC.
6. Relay force and TAO/SWC orders concerning CAP/missile coordination to the CAP.
7. Transmit MIG/SAN warning to the CAP.

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CATEGORY C TASKS

1. Identify US A/C flight characteristics.
2. Identify tactics employed in the fleet environment.
3. Identify weapon capabilities of US A/C.
4. Identify the various missions supported by the A/C: MIGCAP, BARGAP, FORCAP, TARGAP, RESCAP, RECCE, SUBCAP.
5. Interpret air contacts based on video size.
6. Interpret operational data, operational orders and plans, letters of instruction, publications, message traffic, intelligence information, etc.
7. Interpret information appearing on status boards in CIC, and provided by CIC personnel.
8. Observe COMSEC and ECOM procedures during external communications.
9. Transmit and receive tactical information via voice and data link during launch and recovery phases of A/C operations. Accept and give handovers from/to homeplate.
10. Transmit and receive tactical information via two-way data link.
11. Relay information to the SMC/TAO via NTDS inter-console communications.

CATEGORY 2 TASKS

1. State the function of the FABs and track ball on a UYA-4/V10 console.
2. State the functions of the VABs for the AC mode on a UYA-4/V10 console.
3. Set up the NTDS console for normal operations to include:
 - a. radar selection
 - b. mode selection
 - c. console intensities
 - d. display controls

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- e. offset (and steps for clearing offset)
- f. range scale
- g. category select
- h. leaders switch
- 4. Set up and use the NTDS inter-comm.
- 5. Enter a CAP symbol into NTDS with and without data link, with the aid of a list of the steps of procedure.
- 6. Display geometry between a CAP symbol and a hostile aircraft.
- 7. Accept geometry.
- 8. Enter a waypoint.
- 9. Accept and send handovers.
- 10. State the basic components (computers, consoles, program) and functions (real time update from TDS units, assist operator) of NTDS.
- 11. State the functions of the SMC as they relate to the AIC. (Send orders relating to the CAP.)
- 12. Respond to alerts (orders from the SMC).
- 13. Interpret common DRO alerts (engage, salvo, ...)
- 14. Interpret program alerts (illegal action, impossible intercept).
- 15. Change the CAP's
 - a. heading
 - b. speed
 - c. altitude
 - d. missile inventory
 - e. fuel on board
 - f. ID on symbols
- 16. Reposition symbols.
- 17. Enter and change SIF and height.

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18. Locate a symbol using track number and/or SIF call up.
19. Demonstrate:
 - a. ball tab functions
 - b. bring a track into close control
 - c. putting a track on the sequence list
 - d. getting a range and bearing from ownship to a reference point
20. State the difference between track number and CTSL.
21. Identify friendly, CAP, hostile, unknown, engaged, assigned symbols, CAP station and reference point.
22. Track two medium speed air targets, keeping the symbol within two miles of the video 90° of the time.
23. State the meaning of the following NTDS terms:
 - a. TADIL A
 - b. function code
 - c. tactically significant
 - d. SGP
 - e. CTSL
 - f. OTC
 - g. FTC
 - h. QR
 - i. ENGAGE
 - j. SALVO
 - k. TADIL C
 - l. RTB
 - m. ARML
 - n. REVERT-TO-VOICE
 - o. COUPLE/UNCUPLE
 - p. DISCRETES
 - q. TIME-TO-GO
 - r. OWNERSHIP
24. State the function of the IFF system.
25. Identify and state the function of all of the IFF controls that pertain to air control.
26. Demonstrate how to challenge in modes 1, 2, 3, C and mode 4.
27. State the functions of bracket, stretch, IF, gate, and emergency replies.

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28. Obtain height on a friendly aircraft using IFF.
29. State the three main parts that make up a R/T message.
30. Demonstrate the ability to connect a headset to a WTDS console.
31. Demonstrate the ability to select the desired radio channel.
32. Demonstrate the ability to don the headset correctly.
33. Demonstrate the ability to transmit a simple message using radio telephone, using prowords, brevity, and rules for clarity without violating any communication security procedure.
34. State the difference between magnetic and true bearing.
35. Interpret air contacts from a live radar.
36. Track air contacts when returns are considered good or excellent with minimum noise or weather interference.

APPENDIX B

NEW OBJECTIVES

Ordinal Syllabus development called for identification of learning objectives associated with task topics. In some cases the learning objectives identified were below the level of the scope of the Objectives Hierarchy or had not been included in the Objectives Hierarchy because the task was specifically associated with the training environment. New objectives were written, but these objectives do not have numbers which could be called out. Where these objectives appear in lesson outlines they are identified as "New." They are collectively listed in this appendix, in the format used in the objectives hierarchy, and identified with the numbers of the lessons in which they appear. When appropriate, the applicable superordinate objective is indicated in parentheses; objectives associated with the training environment do not indicate a superordinate objective.

Lesson
Number

New Objective

- | | |
|-----|---|
| 3.5 | (3.1.1.1.2.2.) ENTER CAP SYMBOL |
| | <ul style="list-style-type: none"> c. Given a CAP on the PPI and information about CAP data link capability b. enter a CAP symbol into the NTDS system which reflects CAP link capability s. 100% correct |
| 3.8 | (2.1.1.3) ASSIGN CAP TO STATION |
| | <ul style="list-style-type: none"> c. Given a CAP and a station b. transmit the station identity using R/T s. 100% correct within 30 seconds of check-in |
| 3.8 | (3.1.1.1.2.2) ENGAGE CAP TO STATION |
| | <ul style="list-style-type: none"> c. Given a CAP symbol and a station destination for the CAP b. follow NTDS procedure for engaging CAP to station s. 100% correct procedure within 2 miles, 3 degrees, within 20 seconds of assigning CAP to station |

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<u>Lesson Number</u>	<u>Objective</u>
3.16	(3.1.1.1.2.2) DISENGAGE CAP FROM STATION <ul style="list-style-type: none"> c. Given a CAP symbol on station b. follow NTDS procedure for disengaging CAP from station s. 100% correct procedure within 15 seconds of CAP reaching station
7.2	(3.1.1.1.2.2) CALL IN THE DARK <ul style="list-style-type: none"> c. Given a bogey and lost radar return b. transmit "in the dark" to the aircrew s. within 2 sweeps
8.1	OUTLINE OPERATING AREAS/HOT AREAS <ul style="list-style-type: none"> c. Given an area for control and 64 mile range scale b. verify the area under control on your scope and indicate associated hot areas s. prior to starting area control
8.6	DETACH WINGMAN FOR SEPARATION <ul style="list-style-type: none"> c. Given two A/C in training area for setup intercepts b. provide the wingman with separation heading first s. within 1 minute after entering operating area
8.7	ESTABLISH LOST COMMUNICATION PROTOCOL <ul style="list-style-type: none"> c. Given working communications between A/Cs and between A/C and AIC b. verify a procedure to be followed by A/Cs if communications are lost between either A/C and AIC or AIC and an A/C s. within 1 minute of detaching wingman for separation

Lesson
Number

Objectives

8.1 PROVIDE HEADING ADVISORIES FOR AREA CONTROL

- c. Given two A/C for training in setup environment and an identified control area
- b. transmit heading to the A/C to the 1) center of the training area, 2) get them separated most quickly for turn in, 3) keep them within the area
- s. (1) accurate to ± 10 degrees, (2) within 10 seconds after reaching area within 5 degrees of optimal separation, (3) no closer than 5 miles to any area boundary

8.2 TURN BOGEY FOR INTERCEPT

- c. Given the desired separation minus 5 miles between bogey and CAP
- b. relay computer generated recommended heading to the bogey
- s. ± 10 degrees of 'B' ± 5 miles of desired position, turning in the required direction

NOT
IMPLEMENTED

DETERMINING PLANNING BEARING, TARGET ASPECT ANGLE, ANGLE OFF, TRACK

- c. Given a CAP and a simulated bogey separating for an intercept
- b. write down the planning bearing, target aspect angle, angle off, and track crossing angle
- s. to the nearest 5 degrees taking into consideration bearing drift; prior to achieving 2/3 of desired separation

NOT
IMPLEMENTED

PLOT BOGEY'S HEADING AND RECIPROCAL, FIGHTER'S HEADING, AND PLANNING BEARING

- c. Given TAA, AO, TCA and O
- b. plot the bogey's heading and reciprocal fighter's heading, and planning bearing on the plotting head
- s. prior to turning A/C for intercept

APPENDIX C

REMEDATION PATHWAYS

Table C1 shows the remediation pathways for each of the 84 Performance Measurement Variables (PMVs) used in the Air Intercept Controller Prototype Training System. The first column presents the PMV number. The second column shows the segment to which the student is sent after commented practice (CP) failure on that PMV. The third column shows the segment to which the student is sent after free practice (FP) failure on that PMV. The fourth column shows the permitted passing score on a PMV for commented practices. The passing score for PMVs in free practice runs is defined within each appropriate practice segment.

TABLE C1. REMEDIATION PATHWAYS

PMV NO.	CP REM	FP REM	CP PASS	PMV NAME
01	203	204	090	Maintain CAP Symbol In Vicinity Of CAP Video
02	205	207	100	Engage CAP To Station
03	206	207	100	Transmit Station Bearing And Range
04	206	207	095	Transmit Bearing and Range Of Station
05	211	212	100	Engage CAP To Bogey
06	211	212	100	Vector CAP To Bogey
07	213	214	100	Transmit Initial Bogey Bearing And Range
08	215	216	100	Transmit Initial Bogey Track And Ground Speed
09	215	216	095	Transmit Continuing Bogey Bearing And Range
10	106	216	100	Ensure TEC Communication Switches Are Correct
11	106	216	100	Ensure TEC Control Panel Switches Are Correct
12	304	307	100	Range Scale And Offset
13	305	307	100	Enter CAP Symbol, PIF, and Station Altitude
14	306	307	100	C/S Airborne For Control
15	306	307	100	Ruth, This Is C/S...
16	308	307	100	Update CAP Symbol
17	308	309	100	Ask CAP For State
18	308	309	100	Update NTDS With CAP State (non-training environment)
19	308	309	100	Notify SWC Of Control
20	310	311	100	On Station
21				[Deleted]
22	316	317	100	Transmit Bogey Composition And Altitude
23	316	317	100	Place Bogey On Sequence List
24	316	317	100	Respond To Judy Or Tally Ho
25	316	317	100	Lost Contact
26	316	317	100	Contact
27	322	323	100	Disengage CAP From Bogey At Breakaway
28	322	323	100	Re-Engage CAP To Station After Breakaway
29	322	323	100	Vector CAP To Station After Breakaway
30	322	323	100	Report Results Of Engagement
31	402	403	100	Transmit Jink Call
32	404	405	100	Transmit Vector To Counter Jink

TABLE C1. REMEDIATION PATHWAYS - continued

PMV NO.	CP REM	FP REM	CP PASS	PMV NAME
33	404	405	100	Transmit Updated Bogey Track
34	408	410	100	Transmit Bogey Splitting
35	408	410	100	Transmit New Bogey Composition, Altitude
36	503	509	100	Detact And Report Strangers
37	504	509	095	Call Stranger Bearing And Range
38	506	509	100	Transmit Stranger's Track And Angels
39	508	509	100	Stranger Opening
40	603	607	100	Transmit Vectors For Rendezvous
41	603	607	100	Attain Correct Lateral Separation
42	606	607	100	Transmit To The MAC Bearing And Range To The CAP
43	606	607	100	Transmit MAC's Altitude To CAP For Rendezvous
44	608	610	100	Measure Rendezvous Flight Path
45	608	610	100	Measure Rendezvous Separation
46	609	610	095	Transmit To The CAP Bearing And Range To The MAC
47	702	704	100	Fighter In The Dark
48	702	704	100	Bogey In The Dark
49	708	710	100	Transmitting NTDS Down Message
50	709	710	100	Initial Bearing And Range Transmit, NTDS Down
51	709	710	095	Contin. Bearing And Range Transmit, NTDS Down
52	716	718	100	Establishing Comm. After Alarm (Beeper On Guard)
53	717	718	100	Reporting CAP Emergency To JWC
54	717	718	100	Check Emergency Plot Position
55	805	809	100	Select 32 Mile Range Scale For Set Ups
56	801	803	100	Keep Aircraft In The Area
57	802	803	100	Breakaway
58	802	803	100	Disengage Pseudo Bogey From Point-In-Space (B)
59	802	803	100	Disengage CAP From Point-In-Space (A)
60				[Deleted]
61				[Deleted]
62	802	803	100	Engage Pseudo Bogey to PPOI
63	802	803	100	Engage CAP To PPOI
64	802	803	100	Disengage CAP From PPOI
65	811	812	100	Establish Initial And Final Intercept Condition
66	802	803	100	Vector CAP To Bogey In Training
67	802	803	100	Engage CAP To Pseudo Bogey In Training
68	811	812	100	Measure Setup Separation
69	807	809	100	Establish Lost Communications
70	806	809	100	Update NTDS-State
71	806	809	100	Request Pseudo Bogey State (Training)
72	806	809	100	Request CAP State (Training)
73	805	809	100	Enter CAP Symbols And PIF
74	805	809	100	Range Scale And Offset (Training Environment)
75	805	809	100	Update Turn Rate
76	806	809	090	Pseudo Bogey Symbol Update
77	806	809	100	Update Pseudo Bogey Symbol
78	804	809	100	Direct CAP To Center Of Area
79	802	803	100	Engage Pseudo Bogey To Point

TABLE C1. REMEDIATION PATHWAYS - continued

PMV NO.	CP REM	FP REM	CP PASS	PMV NAME
80	802	803	100	Engage CAP To Point
81	808	809	100	Detach Wingman
82	409	410	100	Disengage CAP From Split At Breakaway
83	409	410	100	Disengage CAP From Bogey After Break Engage Alert
84	409	410	100	Engage CAP To Split
85	409	410	100	Vector CAP To Split
86	409	410	100	Transmit Initial Split Bearing And Range
87	409	410	090	Transmit Continuing Split Bearing And Range

APPENDIX D

LESSON OUTLINES

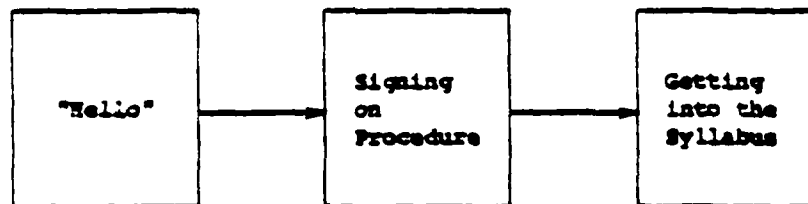
Contained in this appendix are the lesson outlines for the AIC basic course presented by the AIC system. The lesson outlines are reprinted from the Instructor Guide where they are contained in Subsection C of Section VI.

1. Provisional Instructor Handbook for AIC (Air Intercept Controller Prototype Training System), Report NAVTRAEQUIPCEN 78-C-0182-9 (Logicon, Inc.).
Naval Training Equipment Center, Orlando, Florida; in press.

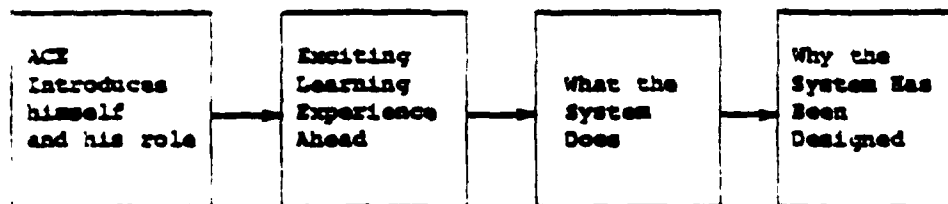
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 1

IXT Segment	#1.1
"Getting on the System"	
Course Objectives Introduced: 0	



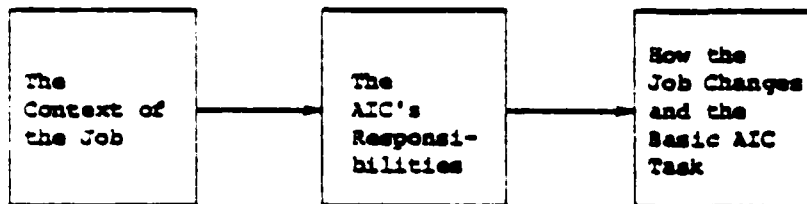
IXT Segment	#1.2
"Introduction to the Experience Ahead"	
Course Objectives Introduced: 0	



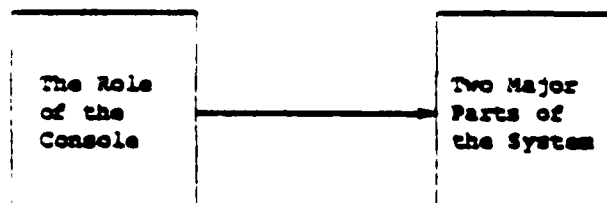
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 1

LAT Segment	#1.3
"Introduction to the Job Being Trained"	
Course Objectives Introduced: 0	

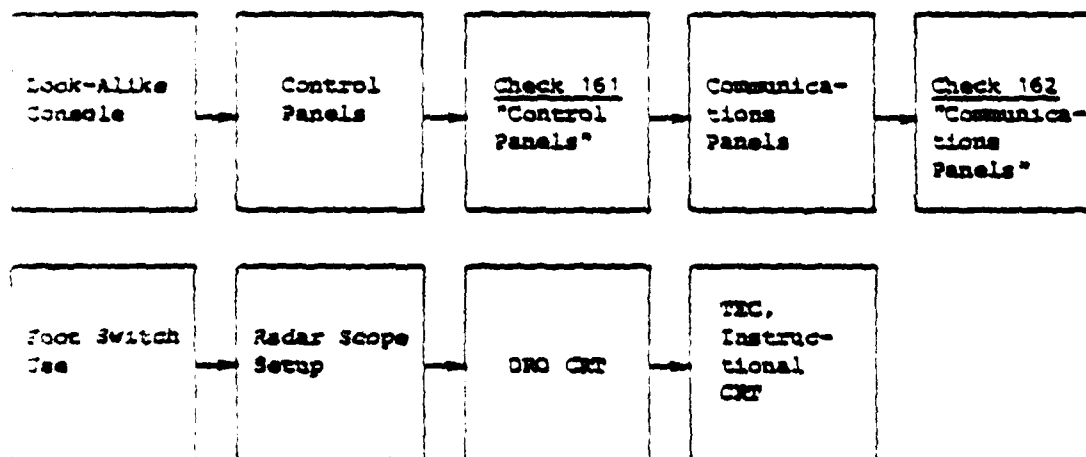
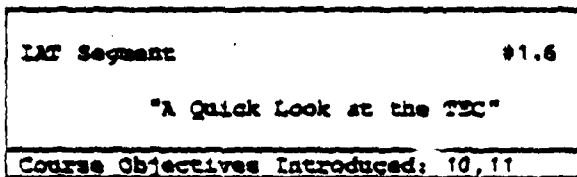
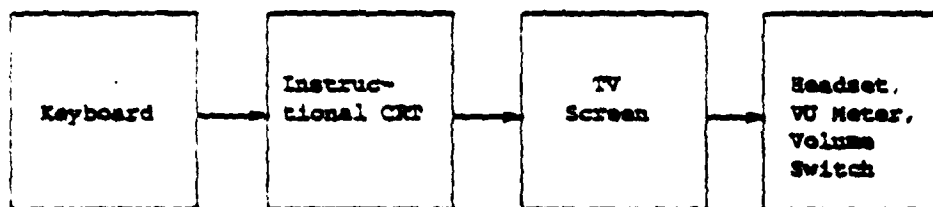
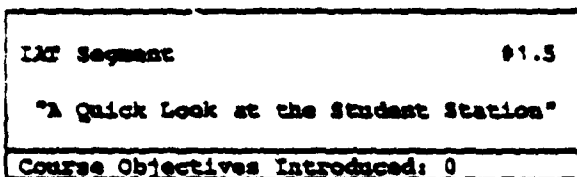


LAT Segment	#1.4
"Introduction to the Parts of the System"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

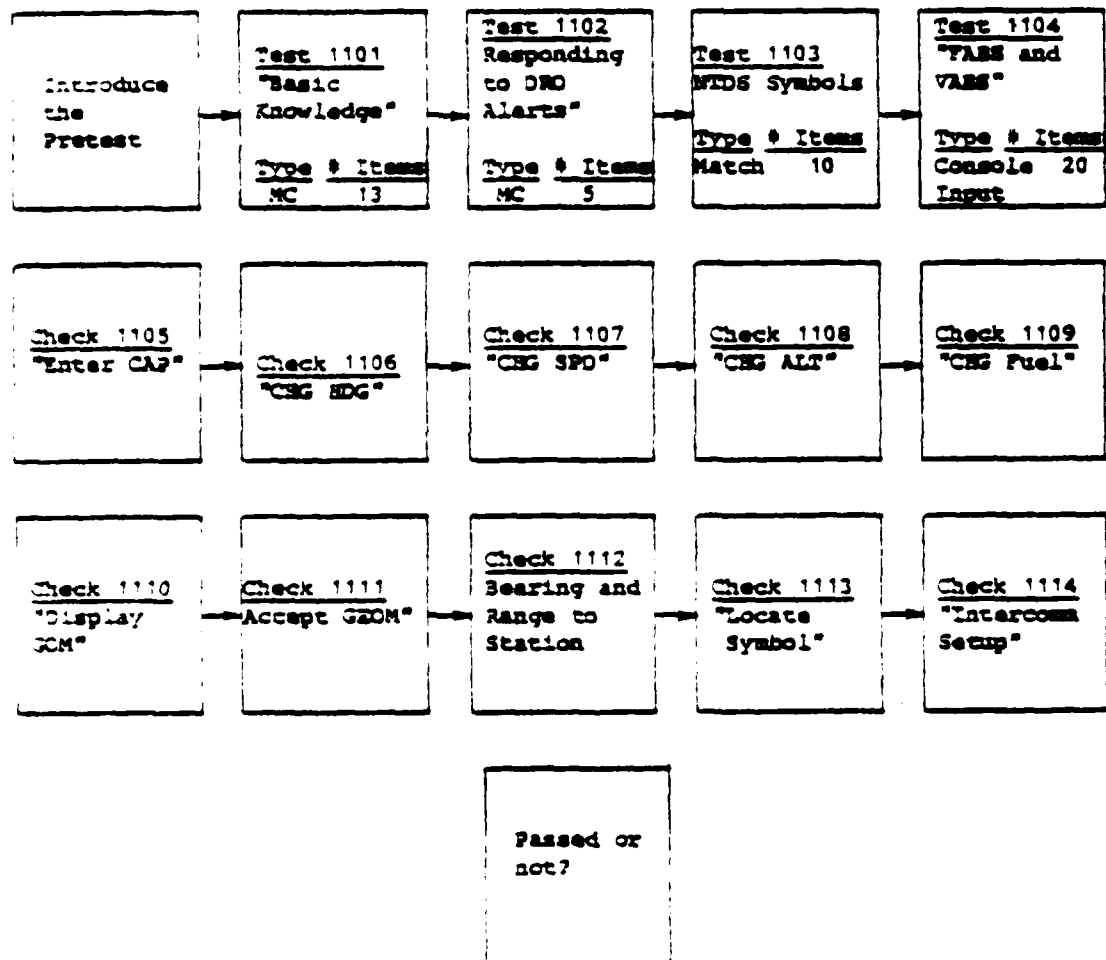
Level 1
Unit 1



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 2

IAT Segment	#1.10
"Program Pretest"	
Course Objectives Introduced: 0	

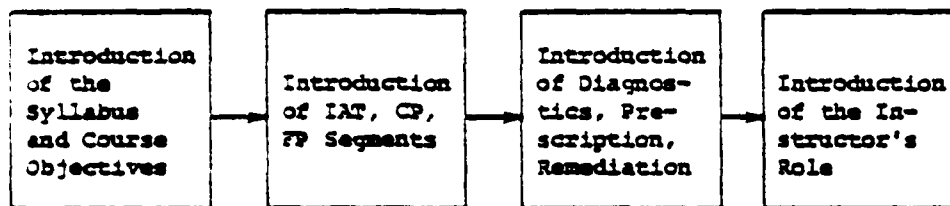


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

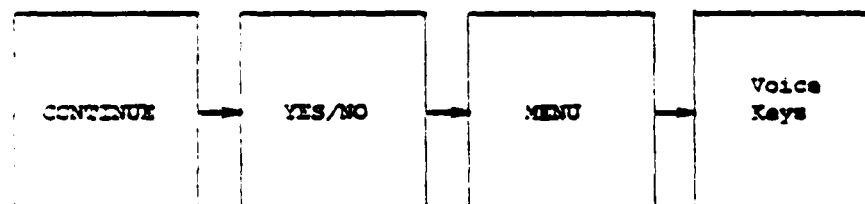
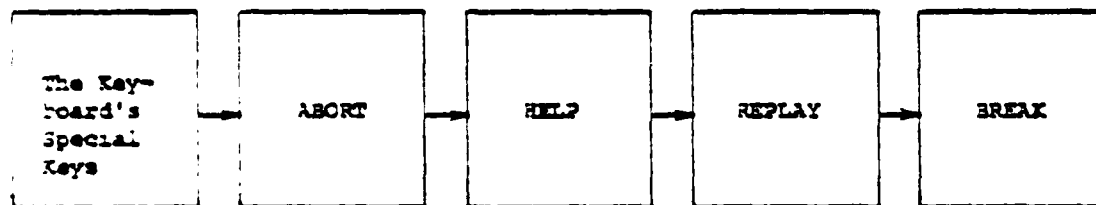
Level 1

Unit 3

IAT Segment	#1.20
"How the Instruction Will Proceed"	
Course Objectives Introduced: 0	



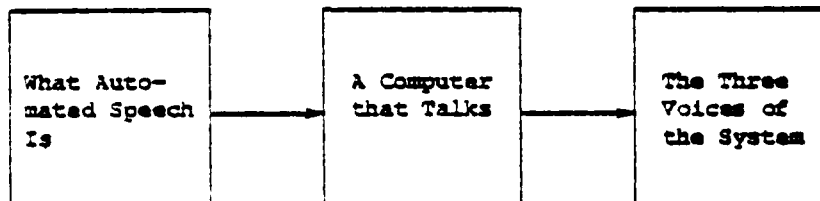
IAT Segment	#1.21
Introduction (partial) to the Special Function Keys"	
Course Objectives Introduced: 0	



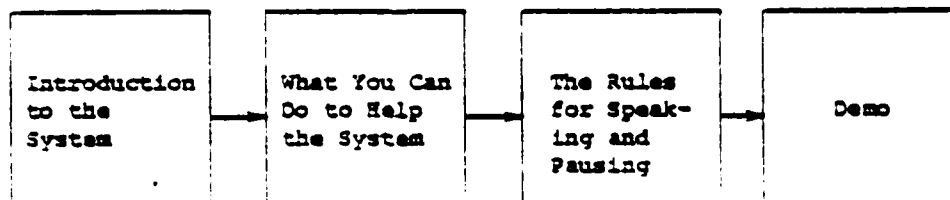
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 4

IAT Segment	#1.30
"Introduction of Automated Speech"	
Course Objectives Introduced: 0	



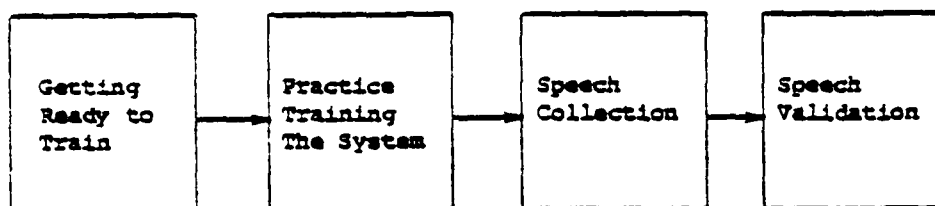
IAT Segment	#1.31
"A Listening and Understanding Computer"	
Course Objectives Introduced: 0	



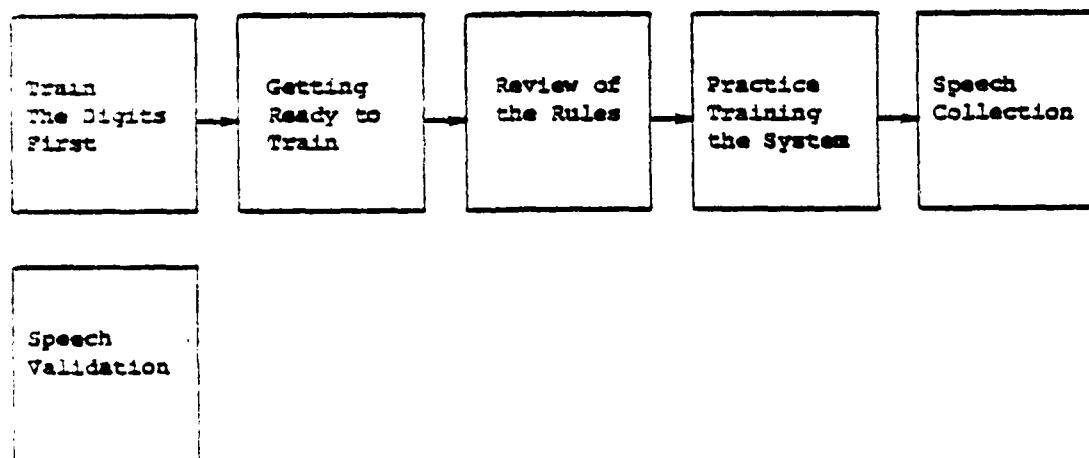
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
 Unit 4

IAT Segment	#1.32
"Demonstration: Training the Computer"	
Course Objectives Introduced: 0	



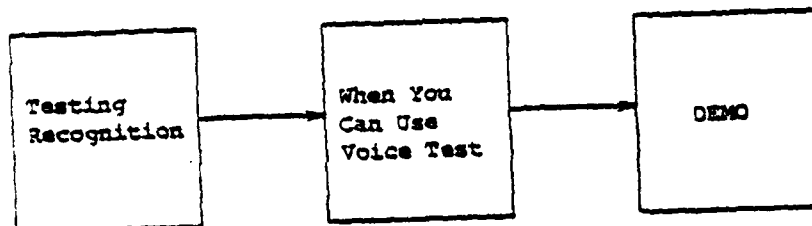
IAT Segment	#1.33
"Training the System on the Digits"	
Course Objectives Introduced: 0	



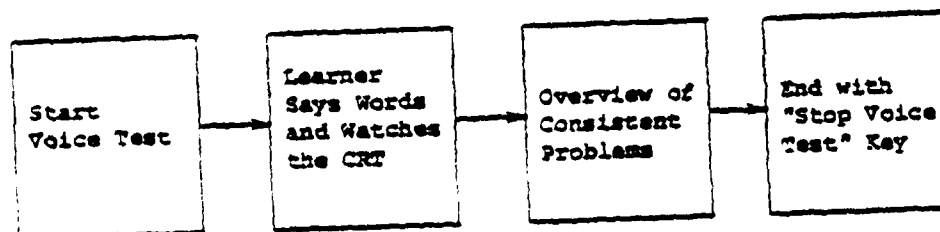
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 4

IAT Segment	#1.34
"Introduction to the Voice Test Function"	
Course Objectives Introduced: 0	



IAT Segment	#1.35
"Demonstration: Voice Test"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 4

IAT Segment #1.36

"Using the Voice Test Function"

Course Objectives Introduced: 0

Learner
Starts
Voice
Test

Legal
Vocabulary
and How to
Get Out of
Voice Test

IAT Segment #1.37

"Introduction to the Retrain Function"

Course Objectives Introduced: 0

Correcting
Consistent
Speech Pro-
blems

When You
Can Use
Retrain

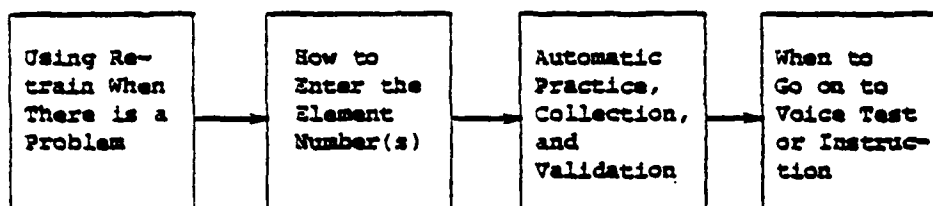
Improving
Recognition

DEMO

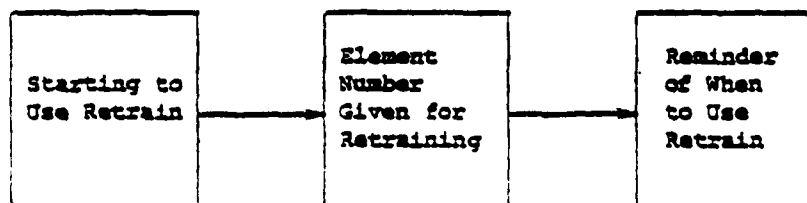
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
 Unit 4

IAT Segment	#1.38
"Demonstration: Retrain"	
Course Objectives Introduced: 0	



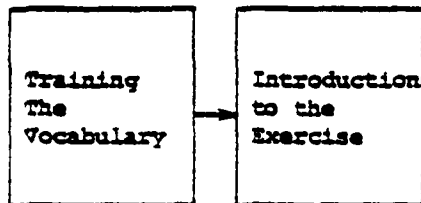
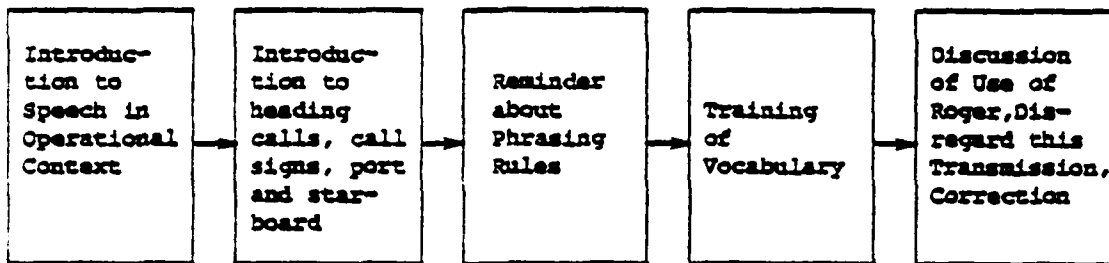
IAT Segment	#1.39
"Using the Retrain Function"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
Unit 4

IAT Segment	#1.40
"Using Voice in the Operational Context"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 1
 Unit 4

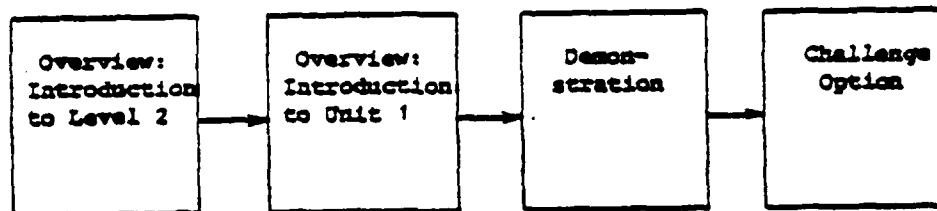
CP Segment			#1.41
"Driving the CAP Symbol Around"			
IAT Segment	Course Objective Measured:	Freeze PMVs:	
1.6	10, 11	10, 11	

IAT Segment			#1.42
"Transition to Level 2"			
Course Objectives Introduced: 0			

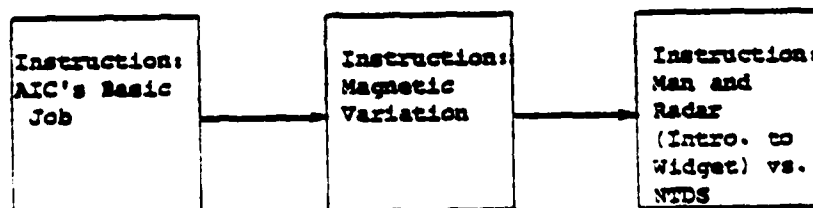
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 1

IAT Segment	#2.1
"Introduction to Level 2"	
Course Objectives Introduced: 0	



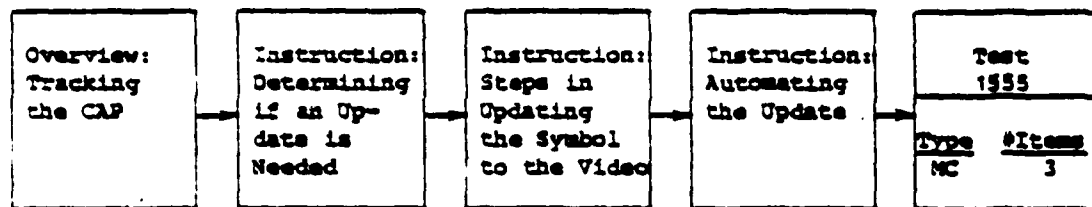
IAT Segment	#2.2
"Advantages of NTDS"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 1

IAT Segment	#2.3
"Tracking the CAP"	
Course Objectives Introduced: 1	

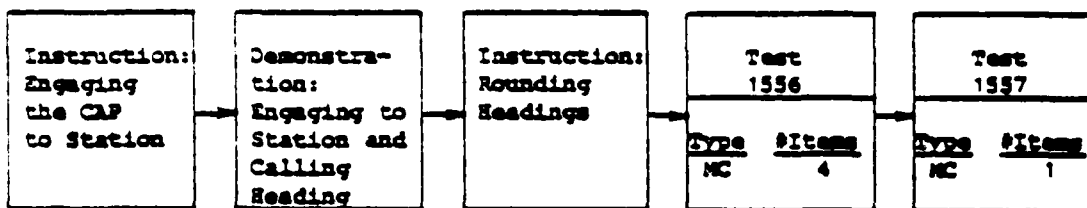


CP Segment		#2.4
"Tracking the CAP"		
Description: Update the CAP symbol, track CAP enroute to station.		
IAT Seg- ment(s): 2.3	Course Objectives Measured: 10,11	Freeze PMVs: 1

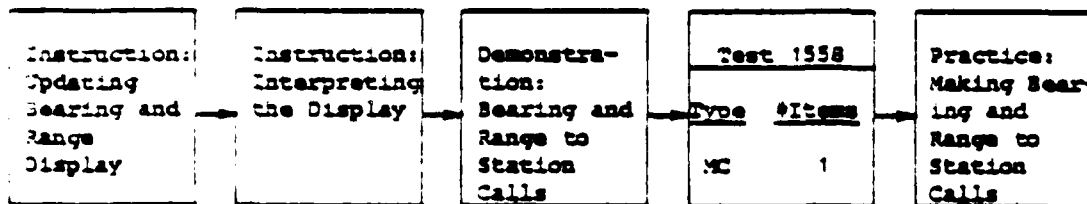
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 1

IAT Segment	#2.5
"Heading to Station"	
Course Objectives Introduced: 2	



IAT Segment	#2.6
"Bearing and Range to Station"	
Course Objectives Introduced: 3, 4	



CP Segment	#2.7
"Heading, Bearing and Range to station"	
Description: track CAP, engage to station, give heading and bearing and range to station.	
IAT Segment(s): Course Objective Freeze	
2.3, 2.5, 2.6	Measured: 10, 11 PMVs: 1, 2, 3, 4

TRAINING EXERCISES (VT)
Detailed Training Exercises (C)

Level: 2
 Unit: 1

IAT Segment	#2.8
"Introduction to FP 2.9"	
Course Objectives Introduced: 0	

Overview:
 Skills to
 be Practiced

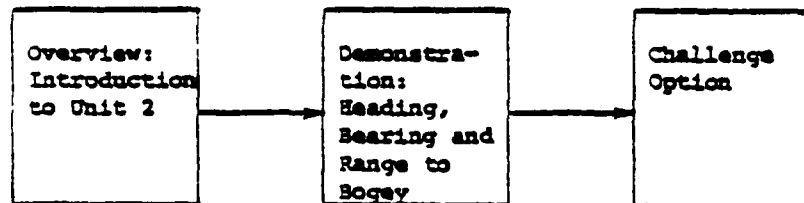
Direction:
 Microphone
 Setup

FP Segment	#2.9
"Heading, Bearing and Range to Station"	
Description: Track CAP, engage to station, heading and range to station.	
CP Segments:	First Evaluation
2.4 2.7	PMVs: 1, 2, 3, 4, 10, 11 runs: 2
	Error free runs: 3

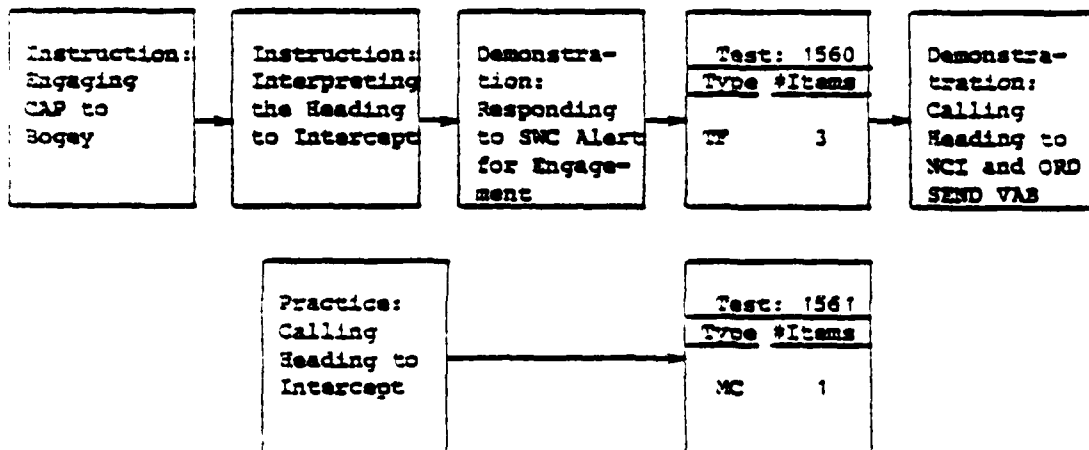
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 2

IAT Segment	#2.10
"Level 2, Unit 2 Introduction"	
Course Objectives Introduced: 0	



IAT Segment	#2.11
"Vectoring to the Bogey"	
Course Objectives Introduced: 5,6	

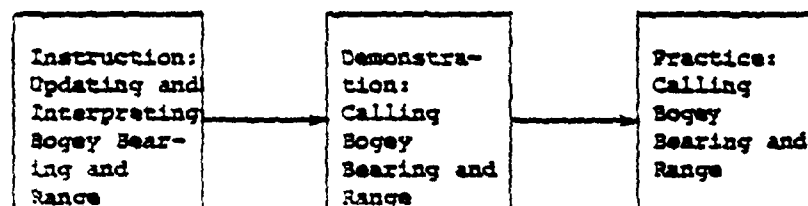


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 2

CP Segment #2.12		
"Vectoring to Bogey"		
IAT Segment(s): 2.11	Course Objective Measured: 10, 11	Freeze PMVs: 5, 6

IAT Segment #2.13	
"Bogey Bearing and Range"	
Course Objectives Introduced: 7	

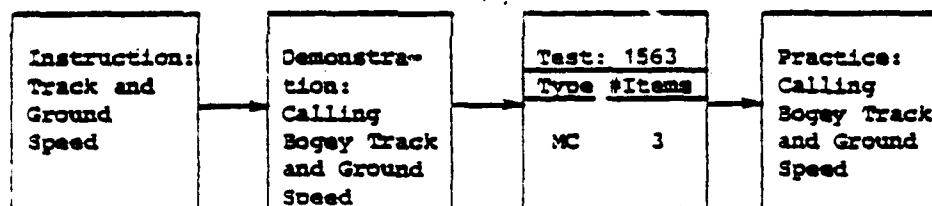


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 2

CP Segment		#2.14
"Bogey Bearing and Range"		
Description: Engage CAP to bogey, vector to bogey bearing and range		
IAT Segment(s):	Course Objective	Freeze
2.13	Measured: 10, 11, 5, 6	PMVs: 7

IAT Segment	#2.15
"Bogey Track and Ground Speed"	
Course Objectives Introduced: 8, 9	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 2

CP Segment		#2.16
"Bogey Dope"		
Description: Engage CAP to bogey, vector to bogey bearing and range, track and ground speed		
IAT Segment(s):	Course Objective	Free ..
2.11 2.13 2.14	Measured: 5, 6, 7, 10, 11	PMVs: 8, 9

IAT Segment	#2.17
"Introduction to FP 2.18"	
Course Objectives Introduced: 0	



NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 2
 Unit 2

FP Segment		#2.18	
"Enroute to Station and Intercept Initiation"			
Description: Engage CAP station, heading, bearing and range to station, engage and vector to bogey, bogey dope			
CP Segments:	First Evaluation	PMV errors/	Error free
2.4,2.7,2.13,2.16	PMVs: 5,6,7,8,9	run: 2	runs: 3

NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
Unit 1

LAT Segment	#3.1
"Introduction to Level 3, Unit 1"	
Course Objectives Introduced: 0	

Overview: Enroute to Station, Runout, Engagement/ Breakaway
--

LAT Segment	#3.2
"Enroute to Station Demonstration"	
Course Objectives Introduced: 0	

Demonstra- tion: Preparation, Check-in, and Enroute/ on Station
--

NAVTRAEQUIPCEN 78-C-0182-3

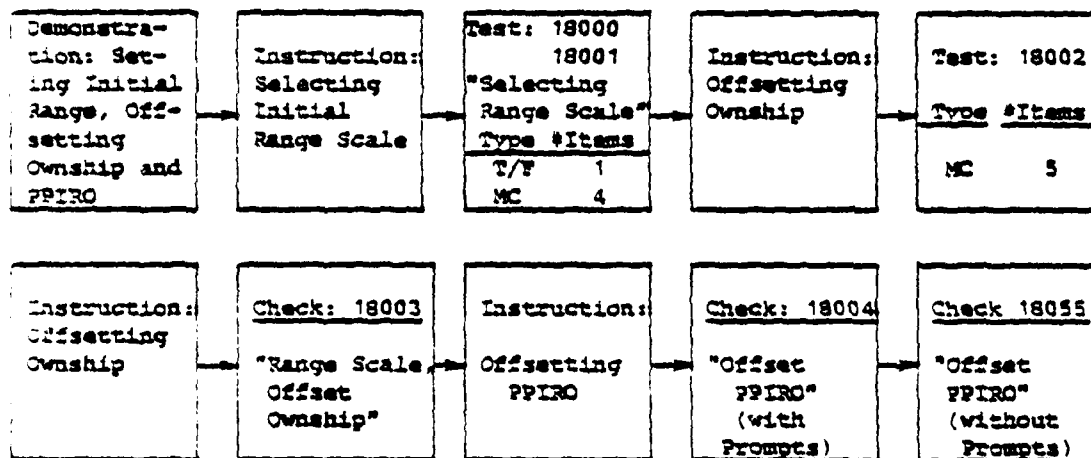
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
Unit 1

IAT Segment	#3.3
"Enroute to Station Challenge"	
Course Objectives Introduced: 0	

Challenge:
Preparation,
Check-in,
Enroute/
On Station

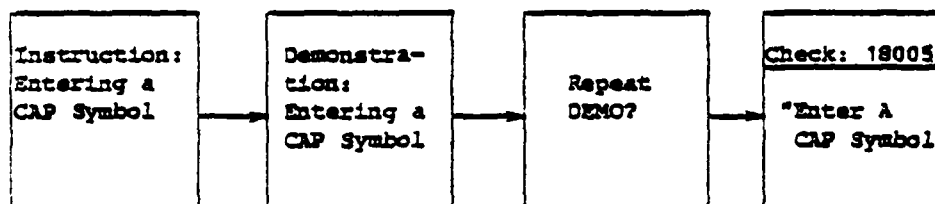
IAT Segment	#3.4
"Console Setup Part II"	
Course Objectives Introduced: 11,12	



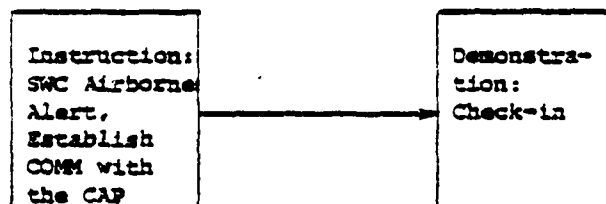
TRAINING EXERCISES (VI)
Detached Training Exercises (C)

Level 3
 Unit 1

IAT Segment	#3.5
"Entering a CAP Symbol"	
Course Objectives Introduced: 13	



IAT Segment	#3.6
"Aircrew Check-in"	
Course Objectives Introduced: 14,15	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
Unit 1

CP Segment		#3.7
"Preparation/Aircrew Check-in"		
Description: Console setup, locate CAP, entering a CAP symbol, update symbol, heading & SPD, establish COMM		
IAT Segment(s):	Course Objective	Freeze
3.4, 3.5, 3.6	Measured: 12,13, 14,15	PMVs: 16

IAT Segment	#3.8
"Enroute to Station"	
Course Objectives Introduced: 16,17,18,19	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 1

CP Segment		#3.9
"Enroute to Station"		
Description: Heading, bearing and range to station, state update, notify SWC of control		
IAT Segment(s): 3.8	Course Objective Measured: 2,3,4	Freeze PMVs: 17,19, 18

IAT Segment	#3.10
"Transmitting Bearing and Range to Station and Reporting on Station"	
Course Objectives Introduced: 20	

Instruction: Transmitting Bearing and Range, On Station

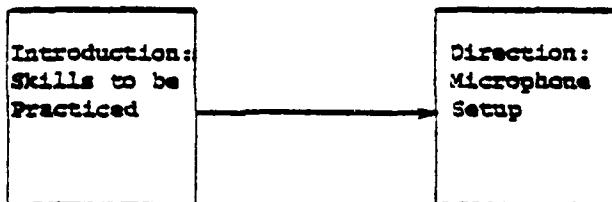
NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 1

CP Segment		#3.11
<p align="center">"Enroute to/on Station"</p> <p>Description: Heading, bearing and range to station, check-in, state update, notify SWC of control, on station call</p>		
IAT Segment(s): 3.10	Course Objective Measured: 2,13,14, 15,16,3,17,19	Freeze PMVs: 20,4

IAT Segment	#3.12
<p align="center">"Introduction to FP 3.13"</p> <p>Description: Same as CP 3.11, but without freezes.</p>	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 1

FP Segment		#3.13	
"Prep/Enroute to Station"			
Description: Same as CP 3.11, but without freezes			
CP Segments: 3.7,3.9,3.11	First Evaluation PMVs: 13,14,15, 16,17,18,19,20	PMV errors/ runs: 2	Error free runs: 2

Level 3
 Unit 2

IAT Segment	#3.14
"Intercept Initiation Demonstration"	
Course Objectives Introduced: 0	

Demonstra-
 tion:
 Intercept
 Initiation,
 Runout

NAVTRAEQUIPCEN 78-C-0182-3

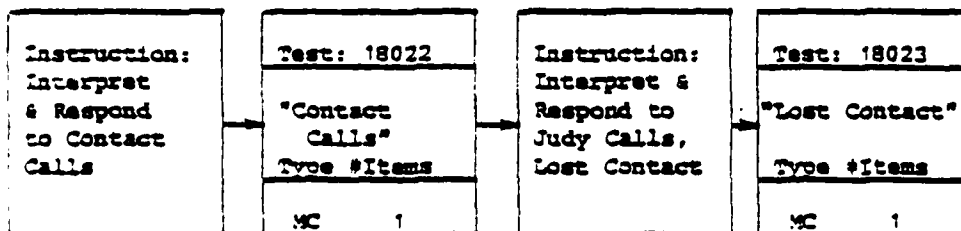
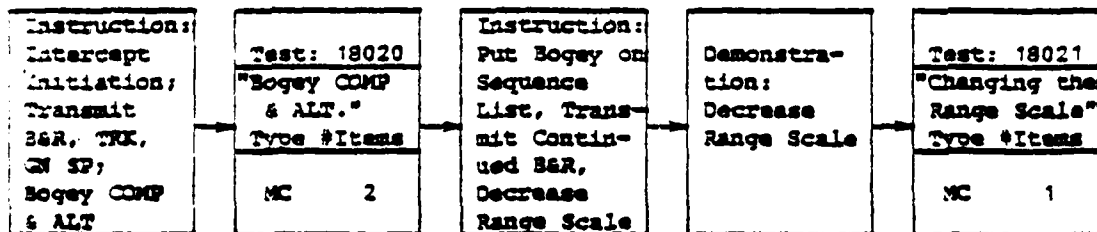
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 2

IAT Segment	#3.15
"Challenge: Runout"	
Course Objectives Introduced: 0	

Challenge:
 Intercept
 Initiation,
 Runout

IAT Segment	#3.16
"Runout"	
Course Objectives Introduced: 22,23,24 25,26	

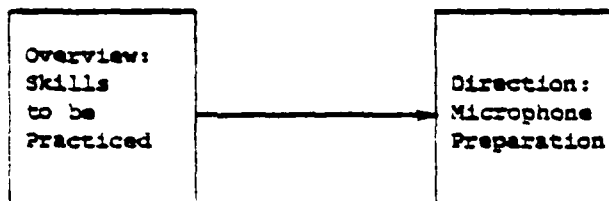


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 2

CP Segment		#3.17
"Rimout"		
Description: Intercept initiation to Judy/ Lost Contact		
IAT Segment(s) 3.14, 3.15, 3.16	Course Objective Measured: 7, 8, 9	Freeze PMVs: 22, 23 24, 25, 26

IAT Segment	#3.18
"Introduction to FP 3.19"	
Course Objectives Introduced: 0	



NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 2

FP Segment		#3.19	
"Runout"			
Description: same as CP 3.17, but without freezes			
CP Segments: 3.17	First Evaluation PMVs: 22,23,24,25, 26	PMV errors/ run: 2	Error free runs: 2,

Level 3
 Unit 3

IAT Segment	#3.20
"Demonstration Engagement/Breakaway"	
Course Objectives Introduced: 0	

Demonstra-
 tion:
 Engagement/
 Breakaway

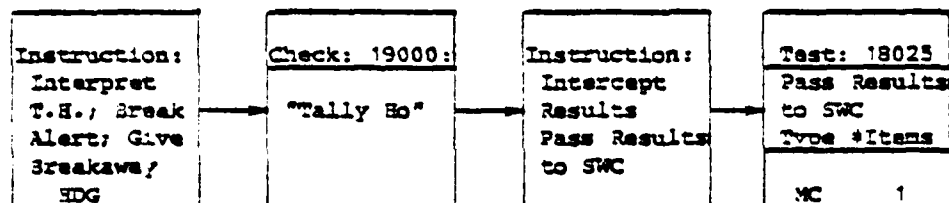
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 3

IAT Segment	#3.21
"Challenge Engagement/Breakaway"	
Course Objectives Introduced: 0	

Challenge:
 Engagement/
 Breakaway

IAT Segment	#3.22
"Engagement/Breakaway"	
Course Objectives Introduced: 27,28,29,30	

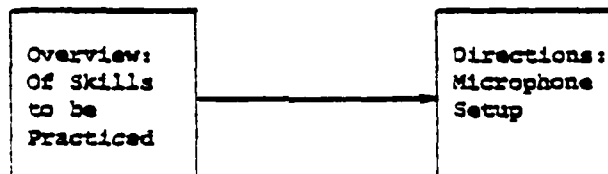


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 3
 Unit 3

CP Segment	#3.23
"Engagement/Breakaway"	
Description: Engagement to bogey, to breakaway, focusing on re-engaging CAP to station after breakaway, breakaway heading, engagement results	
IAT Segment(s): 3.22	Course Objective Measured: Freeze PMVs: 27,28,29,30

IAT Segment	#3.24
"Introduction to FP 3.25"	
Course Objectives Introduced: 0	

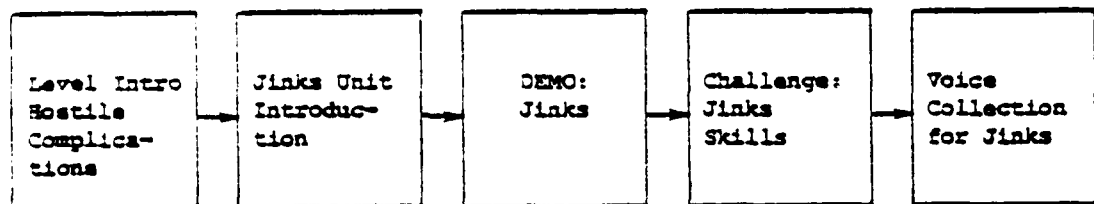


FP Segment	#3.25		
"Engagement/Breakaway"			
Description: From engagement to bogey to request for breakaway			
CP Segment(s): 3.23	First Evaluation PMVs: 27,28,29,30	PMV errors/ run: 2	Error Free Runs: 2

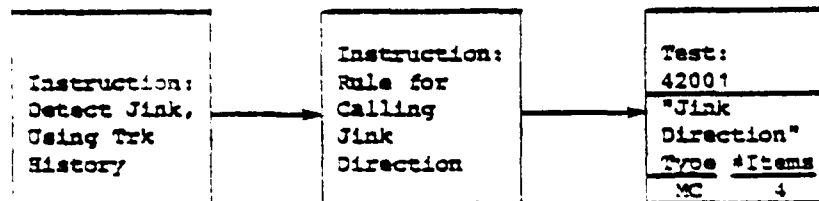
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 1

IAT Segment	#4.1
"Introduction to Bogey Jinks"	
Course Objectives Introduced: 0	



IAT Segment	#4.2
"Detecting and Calling a Jink"	
Course Objectives Introduced: 31	



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ORDINAL SYLLABUS FOR AIR INTERCEPT CONTROLLER PROTOTYPE TRAININ--ETC(U)
SEP 81 M W GRADY, R HALLEY, L H NOWELL N61339-78-C-0182
UNCLASSIFIED 8641-A006 NAVTRAEQUIPC-78-C-01A2-3 NL

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DATE

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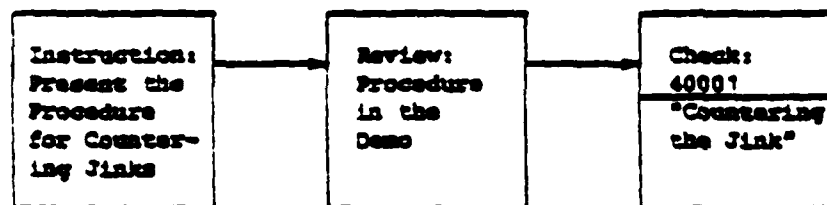
DTIC

TRAINING EXERCISES (VI)
Detailed Training Exercises (G)

Level 4
 Unit 1

CP Segment 04.3		
"Detecting and Calling a Jink"		
IAF Segment(s): 4.1, 4.2	Course Objective Measured: 1,7, 8,9,22	Prereqs PWs: 31

IAF Segment 04.4	
"Countering the Bogey Jink"	
Course Objectives Introduced: 12,33	



TRAINING EXERCISES (VI)

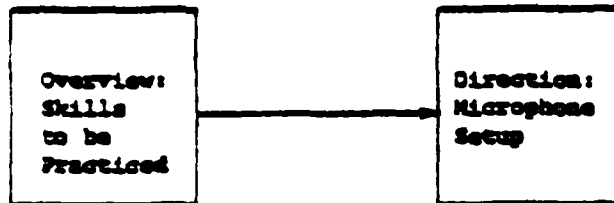
Detailed Training Exercises (C)

Level 4

Unit 1

CP Segment #4.5 "Detecting and Countering the Bogey Jink" Description: Focus on vectoring to counter the jink and transmitting the updated bogey track.		
IAT Segment(s): 4.4	Course Objective Measured: 9,31,1,7	Press PWs: 32,33

IAT Segment #4.20 "Introduction to FP 4.6"
Course Objectives Introduced: 0



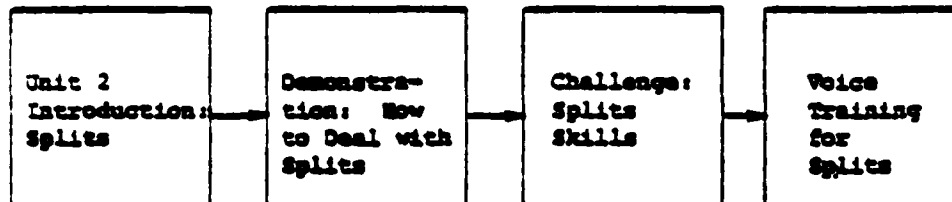
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 1

FP Segment				04.6
"Detecting and Countering Bogey Jink:				
CP Segments:	First Evaluation	PMV errors/	Error free	
4.3, 4.5	PMVs: 31, 32, 33	runs: 3	runs: 2	

Level 4
 Unit 2

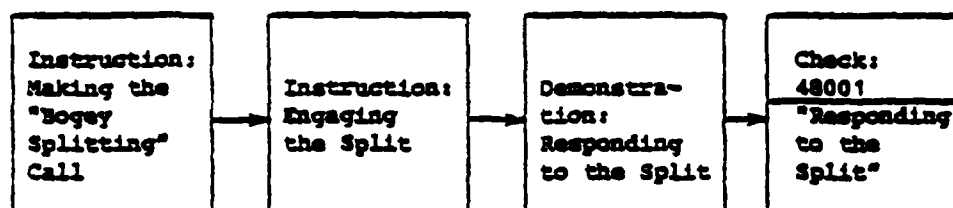
IAT Segment		04.7
"Introduction to Splits"		
Course Objectives Introduced: 0		



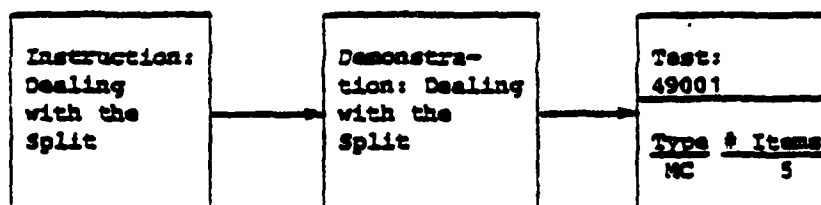
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 2

IAT Segment	#4.8
"Detecting and Responding to Splits"	
Course Objectives Introduced: 34, 35	



IAT Segment	#4.9
"Dealing with the Split"	
Course Objectives Introduced: 82,83,84,85,86,87	

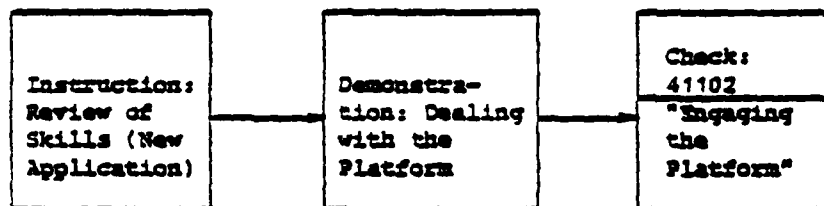


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 2

CP Segment			04.10
"Dealing with the Split"			
Description: Focus on calling the bogey split, calling heading for it and continued split bearing and range calls			
IAT Segment(s)	Course Objectives:	Freeze PMVs:	
4.7,4.8,4.9	1,7,8,9,10,11,22,26	34,35,82,83,84 85,86,87	

IAT Segment	04.11
"Dealing with the Missile Platform"	
Course Objectives Introduced: 0	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 2

IAT Segment	#4.12
"Introduction to FP 4.13"	
Course Objectives Introduced: 0	

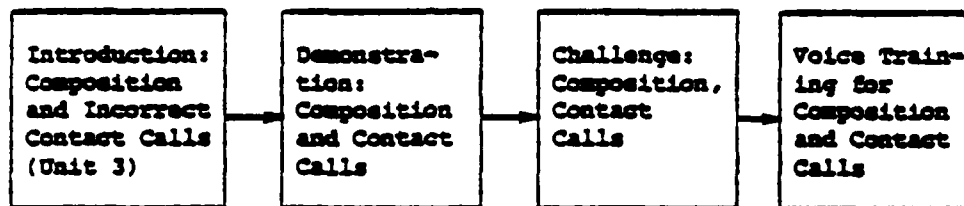
Introduction
 to the Free
 Practice

FP Segment	#4.13		
"The Whole Split Sequence"			
Description: Calling the bogey split, heading to it, continued bearing and range calls for bogey split			
CP Segments:	First Evaluation	PMV errors/	Error free
4.10	PMVs: 34,35,82, 83,84,85,86,87	runs: 3	runs 2

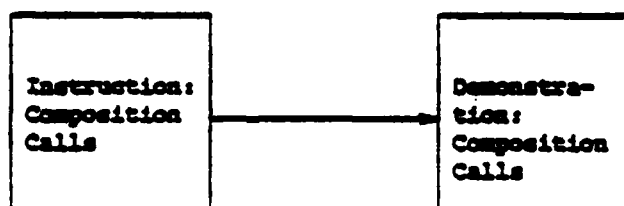
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
Unit 3

IAT Segment	#4.14
"Composition and Incorrect Contact Calls"	
Course Objectives Introduced: 0	



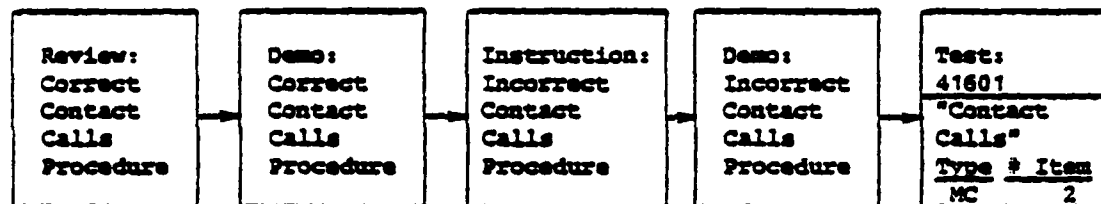
IAT Segment	#4.15
"Bogey Composition"	
Course Objectives Introduced: 22	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4
 Unit 3

IAT Segment	#4.16
"Incorrect Contact Calls:	
Course Objectives Introduced: 0	



CP Segment		#4.17
"Composition and Contact Calls"		
Description: Calling bogey composition and altitude, calling the updated bogey track		
IAT Segment(s): 4.14, 4.15, 4.16	Course Objectives Measured: 1, 5, 6, 7, 8, 9, 10, 11	Freeze PMVs: 22, 33

NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 4

Unit 3

IAT Segment	#4.18
"Introduction to FP 4.19"	
Course Objectives Introduced: 0	

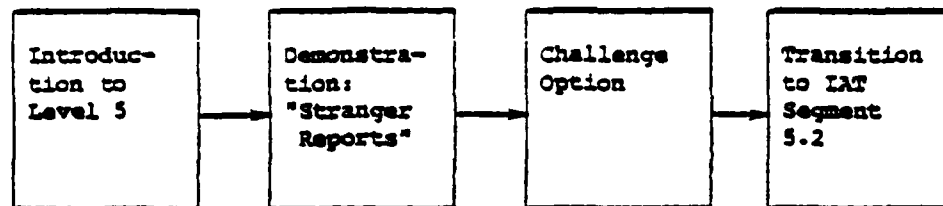
Introduction
to the Free
Practice

FP Segment	#4.19		
"Multiple Bogies"			
Description: Same as CP 4.17, but without freezes			
CP Segments:	First Evaluation	PMV errors/	Error free
4.17	PMVs: 22	runs: 3	runs: 2

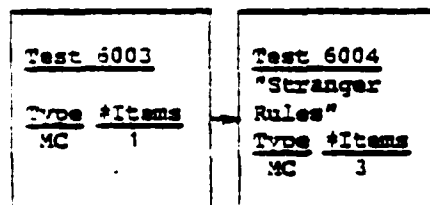
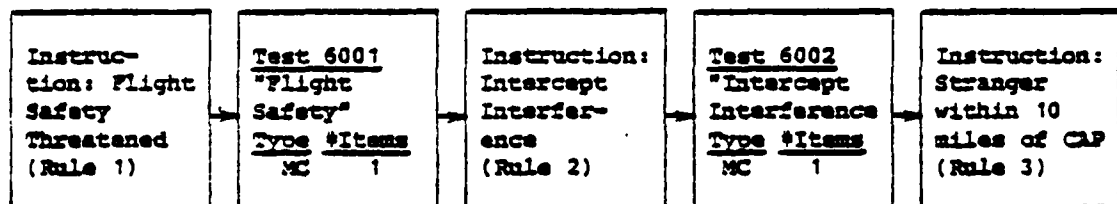
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 5
Unit 1

IAT Segment	#5.1
"Strangers"	
Course Objectives Introduced: 0	



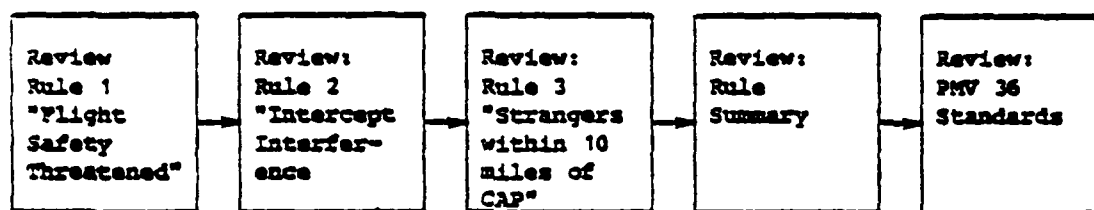
IAT Segment	#5.2
"Reporting Strangers"	
Course Objectives Introduced: 36,37	



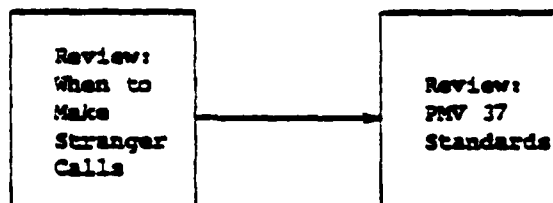
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 5
 Unit 1

IAT Segment	#5.3
"Initial Stranger Reports" (Remediation Only)	
Course Objectives Remediated: 36	



IAT Segment	#5.4
"Stranger Calls" (Remediation Only)	
Course Objectives Remediated: 37	



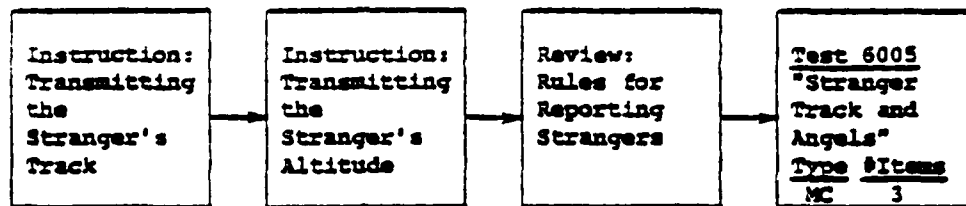
TRAINING EXERCISES (VI)

Detailed Training Exercises (C)

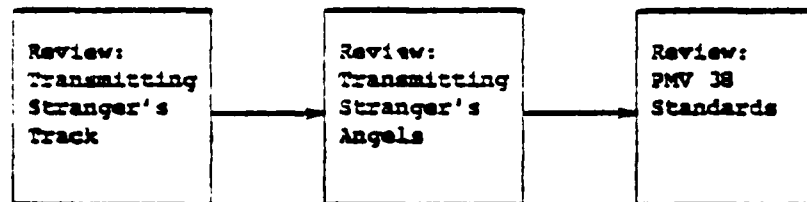
Level 3

Unit 1

LAT Segment	#5.5
"Stranger Track and Angels"	
Course Objectives Introduced: 38	



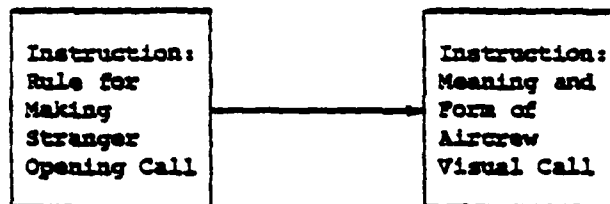
LAT Segment	#5.6
"Stranger Track and Angels" (Remediation only)	
Course Objectives Remediated: 38	



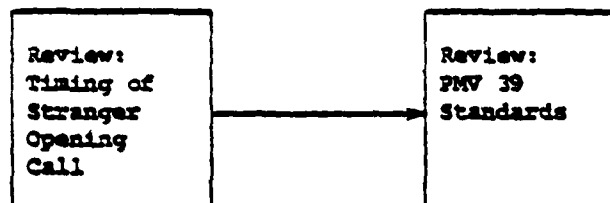
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 5
Unit 1

IAT Segment	#5.7
"Stranger Opening/Visual Calls"	
Course Objectives Introduced: 39	



IAT Segment	#5.8
"Stranger Opening Call" (Remediation Only)	
Course Objectives Remediated: 39	

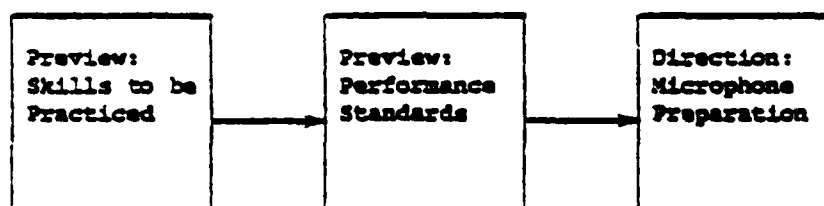


TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 5
 Unit 1

CP Segment		05.9
"Strangers"		
Description: CAP check-in to arrival on station, stranger appears while CAP enroute to station - Freeze with errors on stranger reports, track and angels, stranger calls and stranger opening.		
IAT Segment(s):	Course Objectives	Freeze
5.3,5.4,5.6, 5.8	Measured: 1,2,3, 4,13,14,15,16, 17,19,20	PNVs: 36,37, 38,39

IAT Segment	05.10
"Introduction to PP 5.11"	
Course Objectives Introduced: 0	



NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 5

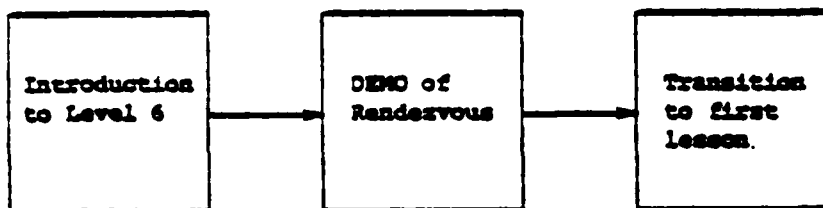
Unit 1

FP Segment		#5.11	
"Stranger"			
Description: From CAP check-in to arrival on station, stranger appearance while on station			
CP Segments: 5.9	First Evaluation PMVs: 36,37,38,39	PMV errors/ run: 4	Error free runs:3

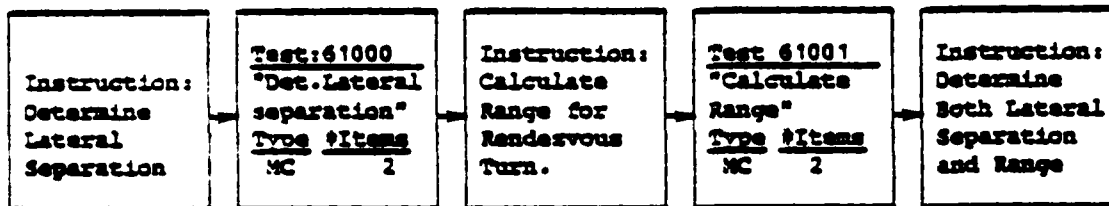
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6
 Unit 1

IAT Segment	#6.1
"Introduction to the Rendezvous"	
Course Objectives Introduced: 0	



IAT Segment	#6.2
"Initial Calculations"	
Course Objectives Introduced: 21	

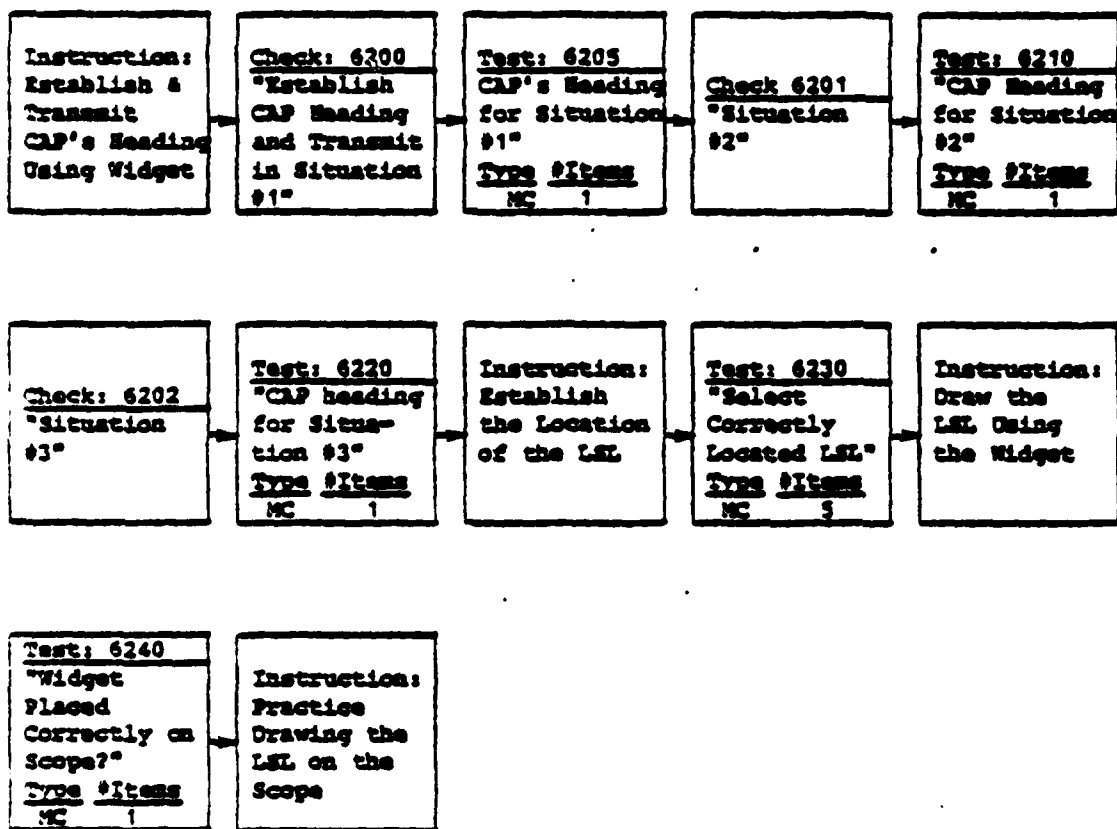


Test: 61002
"Calculate Range"
Type #Items
Match 4

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

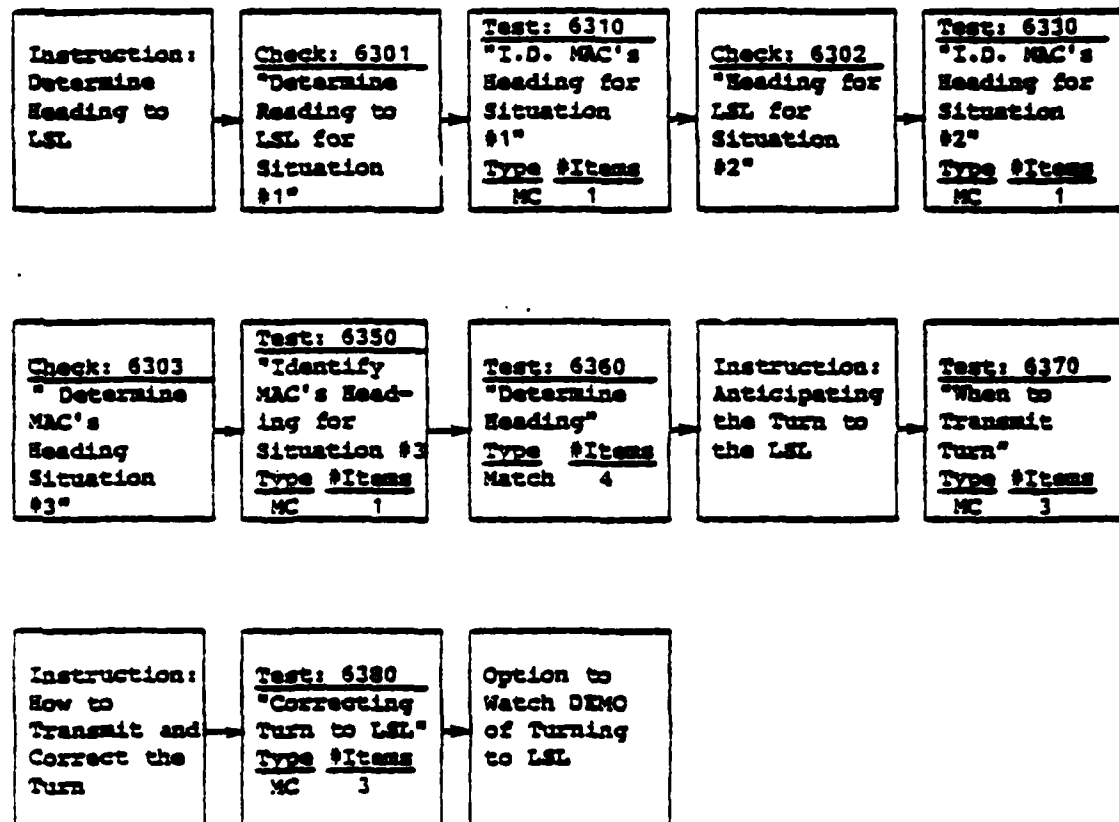
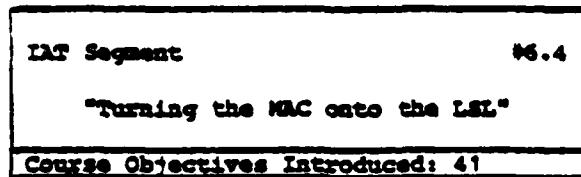
Level 6
Unit 1

LAT Segment	06.3
"Establish the LSL"	
Course Objectives Introduced: 40, 41	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6
Unit 1



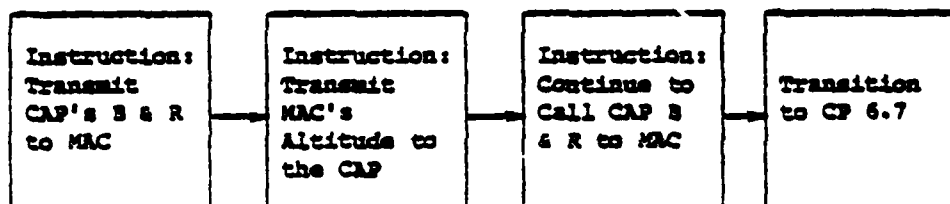
NAVTRARQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6
 Unit 1

CP Segment		#6.5
"Turning the MAC onto the LSL"		
Description: Anticipate the turn to the LSL from 45 heading; transmit the turn, correct the turn if necessary.		
IAT Segment(s):	Course Objectives	Freeze PWs:
6.4	Measured:	41

IAT Segment	#6.6
"Transmissions before the Rendezvous Turn"	
Course Objective Introduced: 42,43	



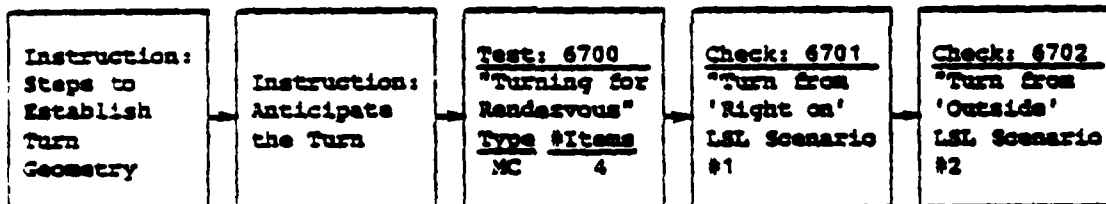
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6

Unit 1

CP Segment	#6.7
"Getting the Aircraft to the Rendezvous Turn"	
Description: Establish the LSL, turn MAC to the LSL, send transmissions required before the final turn.	
IAT Segment(s):	Course Objectives
6.3, 6.4, 6.6	Measured: 40-43

IAT Segment	#6.8
"Turning the MAC for the Rendezvous"	
Course Objectives Introduced: 44, 45	

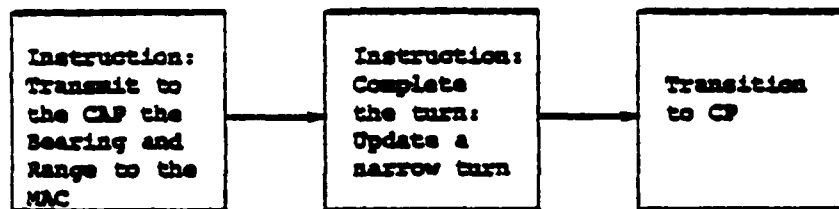


Check 6705 "Turn from Inside the LSL"

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6
Unit 1

IAT Segment	#6.9
"Transmissions to Complete the Rendezvous"	
Course Objectives Introduced: 44, 45, 46	



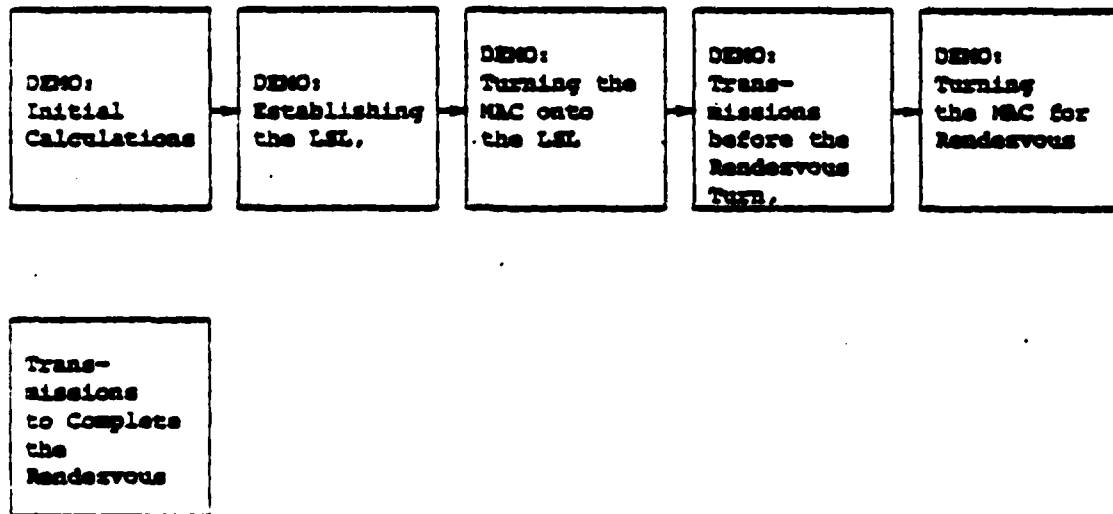
CP Segment	#6.10	
"Making the Turn for Rendezvous"		
Description: Determine time to turn onto the CAP track, transmit the turn; transmit MAC's B&R to CAP; update the turn if necessary.		
IAT Segment(s):	Course Objectives	Freeze PMVs:
6.8, 6.9	Measured:	44, 45, 46

CP Segment	#6.11	
"Making the Turn for Rendezvous"		
Description: Determine time to turn onto the CAP track, transmit the turn; transmit MAC's B&R to CAP; update the turn if necessary.		
IAT Segment(s):	Course Objectives	Freeze PMVs:
6.8, 6.9	Measured:	44, 45, 46

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 6
 Unit 1

IAT Segment	#6.12
"Repeat Rendezvous Demo"	
Course Objectives Introduced: 0	



FP Segment	"Performing the Rendezvous"	#6.13
Description: Establish the LSL, turn MAC to LSL, make transmissions before rendezvous turn. Turn MAC for rendezvous, make transmissions to complete the rendezvous.		
CP Segments: 6.5, 6.7, 6.10	First Evaluation PMVs: 40, 41, 42, 43, 44, 45, 46	PMV errors/ Error free run: 3 run: 2

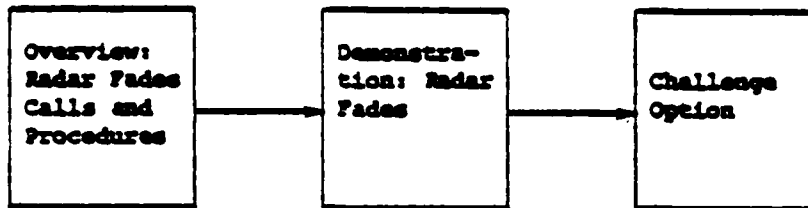
NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

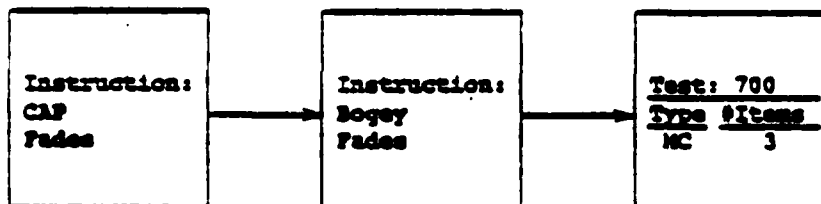
Level 7

Unit 1

IAT Segment	#7.1
"Introduction to Radar Fades"	
Course Objectives Introduced: 0	



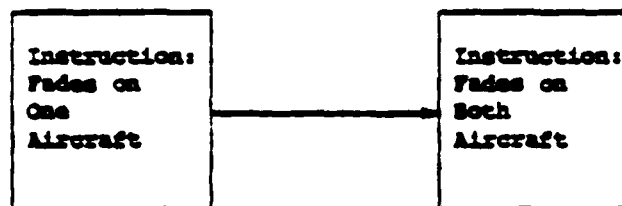
IAT Segment	#7.2
"Calls Used with Radar Fades"	
Course Objectives Introduced: 47,48	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
Unit 1

IAT Segment	#7.3
"After 'In the Dark' Calls"	
Course Objectives Reviewed: 3, 4, 7, 9	



CP Segment		#7.4
"Radar Fades"		
Description: CAP on station, bogey and CAP video fades, scenario ends with Judy call		
IAT Segment(s): 7.2, 7.3	Course Objectives Measured: 1,5,6,7, 8,10,11,19,20,22, 23,24,26	Frame PMVs: 47,48

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 1

LAT Segment	#7.5
"Introduction to FP 7.6"	
Course Objectives Introduced: 0	

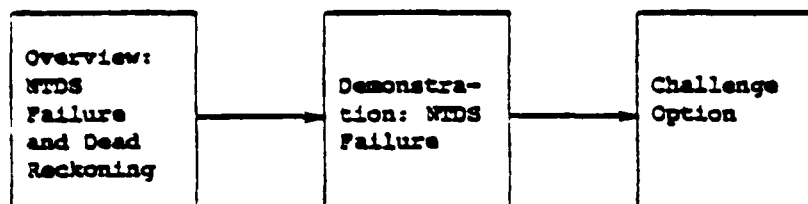


FP Segment	#7.6		
"Radar Fades"			
Description: Full intercept scenario starting with CAP check-in and ending with breakaway. Includes radar fades on CAP and bogey, stranger appearances, bogey splits prior to fades.			
CP Segments:	First Evaluation	PMV errors/	Error free
7.4	PMVs: 47,48	run: 2	runs: 3

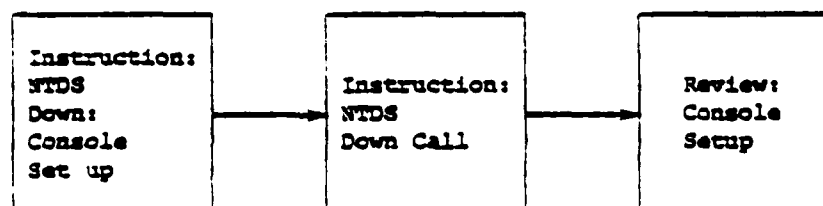
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 2

IAT Segment	#7.7
"Introduction to NTDS Failure"	
Course Objectives Introduced: 0	



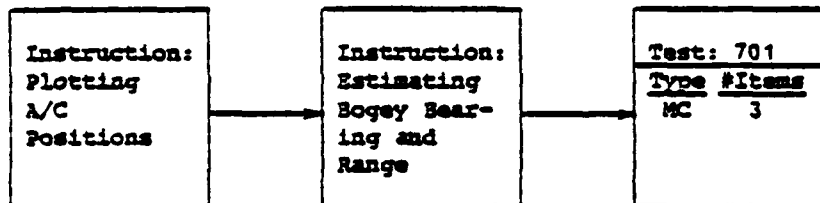
IAT Segment	#7.8
"Responding to NTDS Failure"	
Course Objectives Introduced: 49	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 2

IAT Segment	#7.9
"NTDS Down: Bearing and Range"	
Course Objectives Introduced: 50, 51	

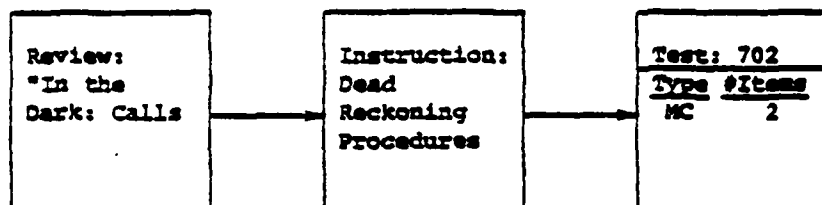


CP Segment		#7.10
"NTDS Down: Bearing and Range"		
Description: CAP on station, background tracks present, bogey jinks prior to NTDS failure		
IAT Segment(s): 7.8, 7.9	Course Objectives Measured: 1,5,6,7, 8,9,10,11,22,23, 31,32,33	Freeze PMVs: 49,50,51

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 2

LAT Segment	#7.11
"Dead Reckoning"	
Course Objectives Reviewed: 47, 48, 50, 51	



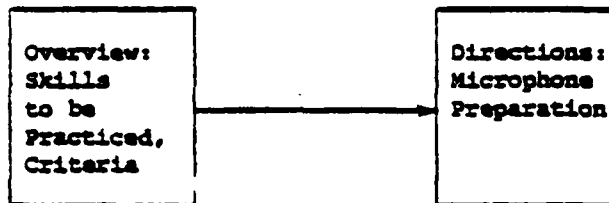
CP Segment	#7.12				
"NTDS Down"					
Description: CAP on station, background tracks NTDS failure, fades on CAP and bogey					
LAT Segment(s): 7.8, 7.9, 7.2, 7.3 (Fades)	<table> <tr> <th>Course Objectives</th><th>Freeze PMVs:</th></tr> <tr> <td>Measured: 1,5,6,7, 8,9,10,11,22,23</td><td>47,48,49,50, 51</td></tr> </table>	Course Objectives	Freeze PMVs:	Measured: 1,5,6,7, 8,9,10,11,22,23	47,48,49,50, 51
Course Objectives	Freeze PMVs:				
Measured: 1,5,6,7, 8,9,10,11,22,23	47,48,49,50, 51				

NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 2

IAT Segment	#7.13
"Introduction to FP 7.14"	
Course Objectives Introduced: 0	

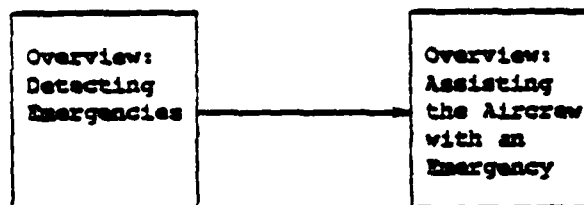


FP Segment	#7.14		
"NTDS Down"			
Description: CAP on station, background tracks, bogey jinks prior to NTDS failure, radar fades on CAP and bogey			
CP Segments:	First Evaluation	PMV errors/	Error free
7.10, 7.12	PMVs: 49,50,51	run: 2	runs: 3

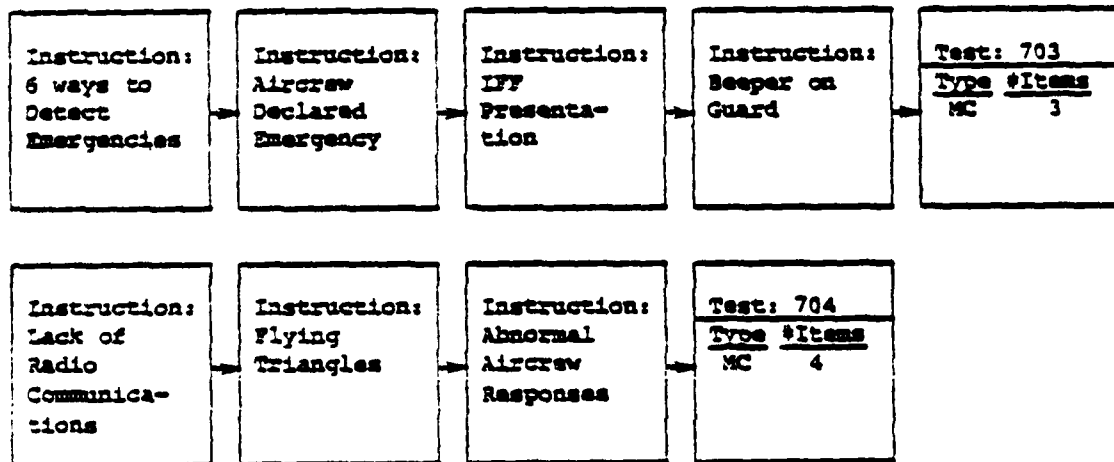
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
Unit 3

IAT Segment	97.15
"Introduction to Emergencies"	
Course Objectives Introduced: 0	



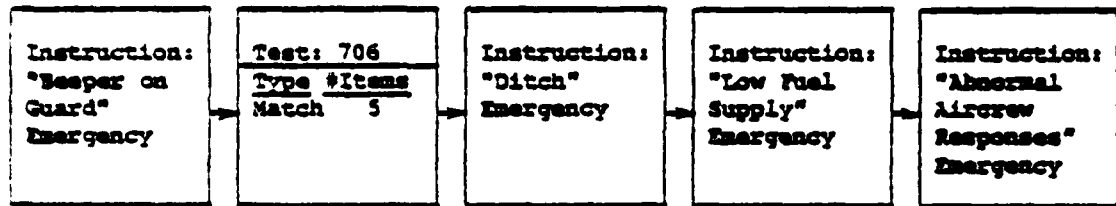
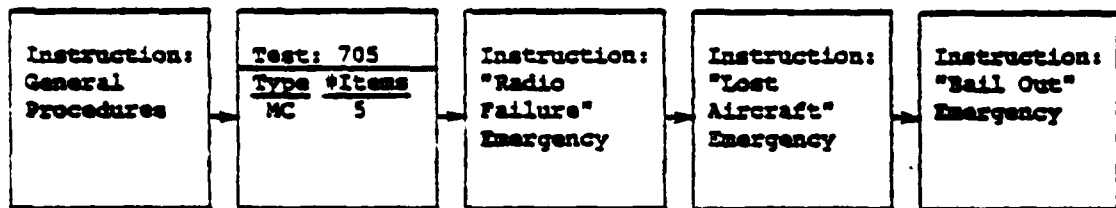
IAT Segment	97.16
"Detecting Emergencies"	
Course Objectives Introduced: 52.60	



TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
 Unit 3

IAT Segment	#7.17
"Assisting the Aircrew During an Emergency"	
Course Objectives Introduced: 53,54,61	



Test: 707
<u>Type #Items</u>
Match 5

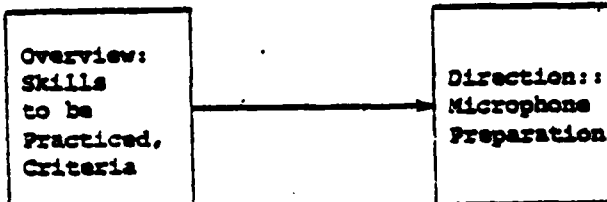
NAVTRAEQUIPCEN 78-C-0182-3

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 7
Unit 3

CP Segment		#7.18
"Emergency"		
Description: CAP on station, bogey jinks, back-ground tracks, bogey radar fades, beeper on guard goes off after Judy call		
IAT Segment(s): 7.16, 7.17	Course Objectives Measured: 1,5,6,7,8, 9,10,11,12,22,23,24, 25,26,31,32,33,48	Freeze PMVs: 52,53,54

IAT Segment	#7.19
"Introduction to FP 7.20"	
Course Objectives Introduced: 0	



FP Segment		#7.20
"Emergency"		
Description: CAP on station, background tracks, bogey jinks, bogey radar fades, beeper on guard occurs after Judy call		
CP Segments: 7.18	First Evaluation PMVs: 52,53,54	PMV errors/ run: 3
		Error free runs: 3

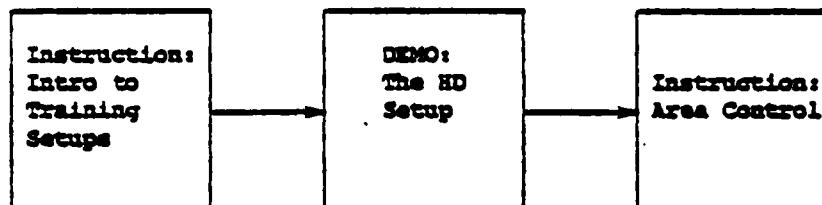
FP Segment		7.73
"Tactical Environment (I)"		
Description: Randomized multiple bogeys, splits jinks, fades, and beeper on guard		
CP Segments: 0	First Evaluation PMVs: 0	PMV errors/ run: 0
		Error free runs: 1

FP Segment		7.74
"Tactical Environment (II)"		
Description: Randomized multiple bogeys, splits, jinks, fades, and beeper on guard (dumb CAP)		
CP Segments: 0	First Evaluation PMVs: 0	PMV errors/ run: 0
		Error free runs: 1

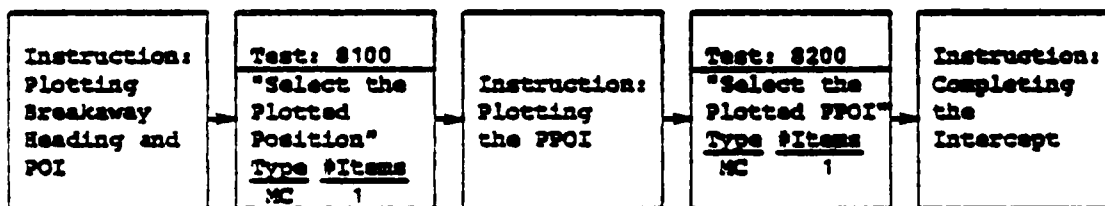
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
 Unit 1

IAT Segment	#8.1
"Introduction to Setups and Area Control"	
Course Objectives Introduced: 56	



IAT Segment	#8.2
"Intercepts Part 1, Head On Intercept Setups"	
Course Objectives Introduced: 56,57,58, 59,62,63,64,66,67,79,80	



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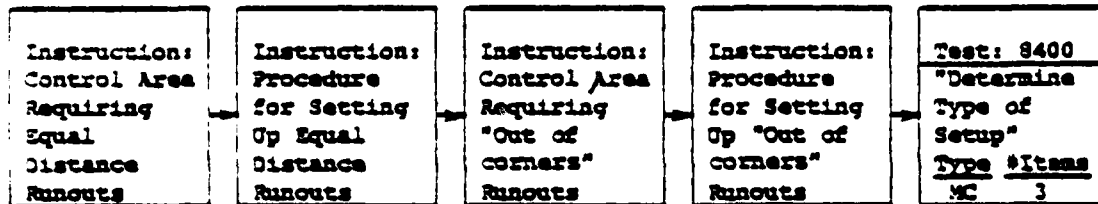
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
Unit 1

CP Segment			#8.3
"Intercept - Part 1"			
Description: Area control, breakaway heading, POI, PPOI, completing the intercept			
IAT Segment(s):	Course Objectives	Freeze PWVs:	
8.1, 8.2	Measured: 1,7,8,9, 22,24,25,26,65,68, 76	56,57,58,59 62,63,64,66, 67,79,80	

Level 8
Unit 2

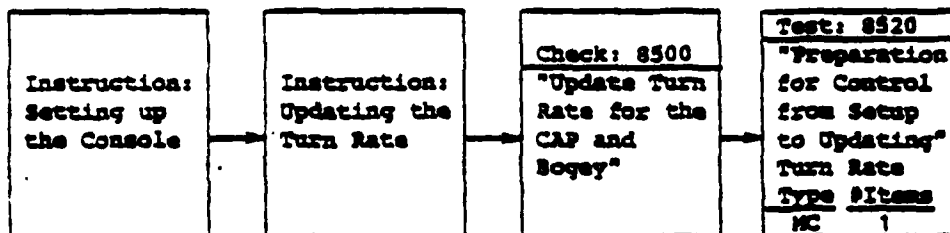
IAT Segment	#8.4
"Intercepts - Part 2 - Equal distance Runout and Getting Out of corners:	
Course Objectives Introduced: 78	



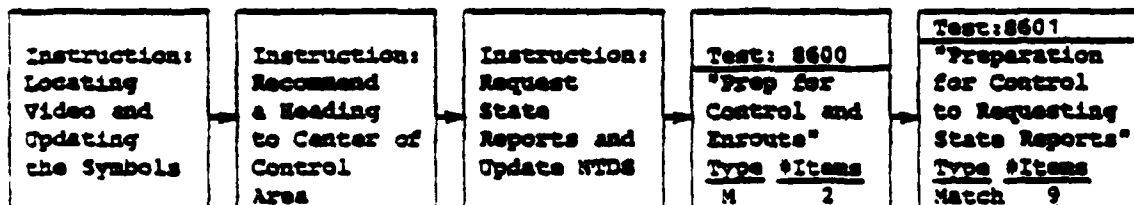
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
Unit 2

IAT Segment	#8.5
"Enroute to the Area"	
Course Objectives Introduced: 55,73,74,75	



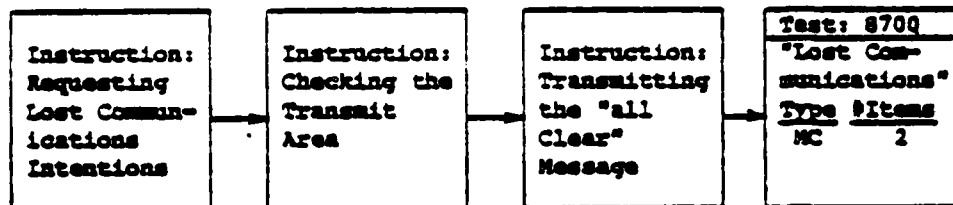
IAT Segment	#8.6
"Aircrew Check-In"	
Course Objectives Introduced: 70,71,72, 76,77,78	



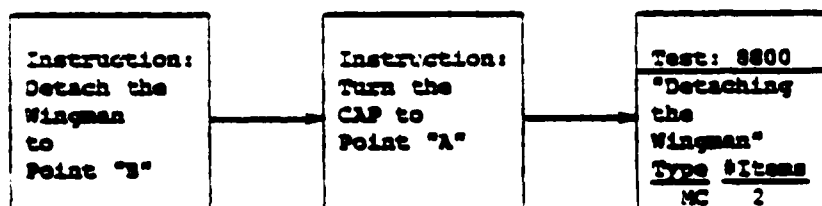
TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
 Unit 2

IAT Segment	#6.7
"Lost Communications"	
Course Objectives Introduced: 69	



IAT Segment	#6.8
"Detach the Wingman"	
Course Objectives Introduced: 81	



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TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
 Unit 2

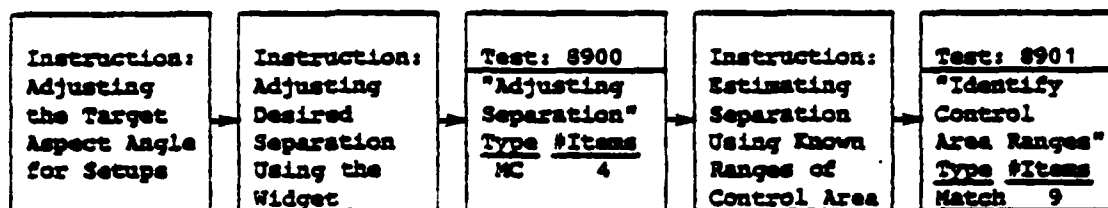
CP Segment		#8.9
"Intercept - Part II"		
Description: Control areas, equal distance runouts, getting out of corners, preparation for control, aircrew check-ins, lost communications, detaching wingman		
IAT Segment(s):	Course Objectives	Freeze PMVs:
8.4, 8.5, 8.6,	Measured: 1,7,8,9,22,	55,69-75,77,
8.7, 8.8	24,25,26,56,58,59,62-68,76,79,80	78,81

FP Segment		#8.10
"From Preparation to Judy"		
Description: Control areas, equal distance runouts and getting out of corners, preparation for control, aircrew check ins, lost communications, detach wingman		
CP Segments:	First Evaluation	PMV errors/ Error free
8.9	PMVs: 56-59,62-81	run: 4 runs: 2

TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
 Unit 3

IAT Segment	#8.11
"Super Setups: Adjusting Target Aspect Angle (TAA) and Separation:	
Course Objectives Introduced: 65,68	



Test: 8902 "Identify Control Area Ranges" <u>Type #Items</u> Match 4

CP Segment	#8.12	
"Super Setups: Adjusting TAA and Separation"		
Description: 1) Using the widget to setup TAA at 10°, 15° (forward Quarter), 20°, 35°, 45° and to adjust the separation by using fixed dimensions of the control area to judge distances for estimating separation.		
IAT Segment(s): 8.11	Course Objectives Measured: 1,7,8, 9,22,24,25,26,27, 55-59,62-80	Freeze PMVs: 65,68

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TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
Unit 3

FP Segment		#8.13	
"Running Super Setups, Set 1"			
Description: Same as FP 8.10, deleting PMVs 69, 73, 74, 75, 78 and 81 (Starts with CAPs in the OPAREA)			
CP Segments: 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 5	Error free run: 2

FP Segment		#8.14	
"Running Super Setups, Set 2"			
Description: Same as 8.13 with higher standards			
CP Segments:	First Evaluation	PMV errors/	Error free
8.03, 8.12	PMVs: 0	run: 5	runs: 2

Level 8
Unit 4

FP Segment		#8.15	
"Running Super Setups, Set 1"			
Description: Higher standards than 8.13 and 8.14 but the same skills			
CP Segments: 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 3	Error free runs: 4

FP Segment		#8.16	
"Running Super Setups, Set 2"			
Description: Higher standards than 8.15, but the same skills			
CP Segments: 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 3	Error free runs: 4

FP Segment		#8.17	
"Running Super Setups, Set 3"			
Description: Run setups as in 8.15 and 8.16 in new situation			
IAT segment(s):	First Evaluation	PMV errors/	Error free
8.03, 8.12	PMVs: 0	run: 3	runs: 4

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TRAINING EXERCISES (VI)
Detailed Training Exercises (C)

Level 8
Unit 4

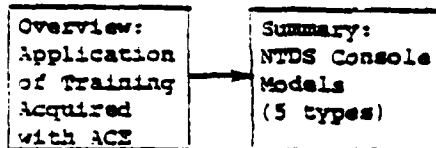
FP Segment		#8.18	
"Running Super Setups, Set 4"			
Description: Run setups as in 8.17 in new situation			
IAT segment(s): 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 3	Error free runs: 4

FP Segment		#8.19	
"Running Super Setups, Set 5"			
Description: Run setups as in 8.18 in new situation			
IAT segment(s): 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 2	Error free runs: 5

FP Segment		#8.20	
"Running Super Setups, Set 6"			
Description: Run setups as in 8.19 in new situation			
IAT segment(s): 8.03, 8.12		First Evaluation PMVs: 0	PMV errors/ run: 2
		Error free runs: 5	

FP Segment			8.21
"Running Super Setups, Set 7"			
Description: Run setups as in 8.20 in new situation			
CP segment: 8.03, 8.12	First Evaluation PMVs: 0	PMV errors/ run: 2	Error free runs: 5

IAT Segment	8.65
"End of Course Summary"	
Course Objectives Introduced: 0	



APPENDIX E

RELATED OBJECTIVES FROM THE BEHAVIORAL OBJECTIVES HIERARCHY

The following pages present a listing of the objectives, from the Behavioral Objectives Hierarchy Report¹ which are introduced in each of the following instructional segments. Segments not listed do not introduce new topics or objectives. Some objectives will be repeated in this listing. This means they are being utilized in a new context. Objectives which are identified as "new" are those objectives contained in Appendix B.

Level 1

Segment 1.6

- | | |
|-----------|--|
| 3.1.1.1.1 | Preset NTDS controls for normal operations |
| 3.3.1 | Obtain required data from PPI display interpretation |

Level 2

Segment 2.3

- | | |
|-----------|---|
| 1.2.1.1 | Obtain updated air return positions |
| 3.1.1.1.2 | Display data by operating NTDS console with operational program |
| 3.2.1.2 | Update CAP symbol (if needed) |

Segment 2.4

- | | |
|-----------|--|
| 3.1.1.1.1 | Preset the NTDS controls for normal operations |
|-----------|--|

Segment 2.5

- | | |
|---------------|-----------------------------|
| 3.1.1.1.2.2.7 | Display CAP ordered heading |
|---------------|-----------------------------|

Segment 2.6

- | | |
|---------|---|
| 3.3.1.1 | Obtain required magnetic bearing data from PPI display interpretation |
| 4.1.2 | Determine if radio/telephone is the correct transmission medium |
| 4.2 | Utilize appropriate vocabulary for transmission |
| 4.3 | Apply appropriate transmission procedures |
| 4.4.2 | Send a message by manipulating radio/telephone equipment |

1. Objectives Hierarchy for Air Intercept Controller Prototype Training System, Report NAVTRAEQUIPCEN 78-C-0182-2 (Logicon, Inc.). Naval Training Equipment Center, Orlando, Florida; in press.

NAVTRAEQUIPCEN 78-C-0182-3

Segment 2.11

- 3.1.1.1 Display update data on NTDS console with operational program
- 3.1.1.1.2.2.7 Display CAP ordered heading
- 3.3.2.1 Obtain required target data from DRO interpretation
- 3.3.2.2.11 Obtain required CAP weapon system status from DRO interpretation

Segment 2.13

- 3.3.2.1.1 Obtain required target range and bearing data from DRO interpretation
- 4.2 Utilize appropriate vocabulary for transmission

Segment 2.15

- 3.3.2.1.1 Obtain required target range and bearing data from DRO interpretation
- 3.3.2.1.2 Obtain required target track and ground speed data from DRO interpretation
- 4.2 Utilize appropriate vocabulary for transmission

Segment 3.4

- 3.1.1.1.1 Preset the NTDS controls for normal operations
- 3.1.1.1.1.8 Preset the displayed area

Segment 3.5

- NEW Enter CAP symbol

Segment 3.6

- 3.3.5.1 Obtain required information from CIC personnel response interpretation
- 1.3.2.2.9 Match present characteristics with defining characteristics for TAO/SWC orders
- 3.2.1.2 Update CAP symbol (if needed)

Segment 3.8

- 3.2.1.2 Update CAP symbol (if needed)
- 3.3.6 Obtain required data from aircrew transmissions
- 1.3.2.2.6 Match present characteristics with defining characteristics for critical levels of CAP state/status
- 3.1.1.1.2.2.11 Display CAP fuel on board
- NEW Assign CAP to station
- NEW Engage CAP to station

Segment 3.10

1.3.1.2.1 Match characteristics with definitions for stationing phase

Segment 3.16

1.2.2.1.3 Obtain required altitude data from DRO interpretation
 1.2.1.1 Obtain updated air return positions
 1.3.2.2.8 Match present characteristics with defining characteristics for aircrew requests
 1.3 Compare data to CAP phase definitions to classify present CAP situation
 1.2.3 Obtain required data from IFF interpretation
 3.3.6 Obtain required data from aircrew transmissions
 NEW Disengage CAP from station

Segment 3.22

1.3.2.2.8 Match present characteristics with defining characteristics for aircrew requests
 1.3.1.2.1 Match characteristics with definitions for stationing phase
 2.1.1 Determine the AIC updated data needed by the aircrews
 2.1.2 Determine the AIC updated data needed by the TAO/SWC
 1.3.1.2.10 Match characteristics with definitions for simulated tactical phases
 3.1.1.1.2.3 Display orders from TAO/SWC
 3.3.1 Obtain required data from PPI display interpretation

Level 4

Segment 4.2

1.3.2.2.3 Match present characteristics with defining characteristics for hostile aircraft jinks

Segment 4.4

1.3.2.2.3 Match present characteristics with defining characteristics for hostile aircraft jinks
 3.1.1.1 Display update data on NTDS console with operational program

Segment 4.8

1.3.2.2.1 Match present characteristics with defining characteristics for additional hostile aircraft
 1.3.2.2.4 Match present characteristics with defining characteristics for specific hostile aircraft tactics
 2.1.1 Determine the AIC updated data needed by the aircrew

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Segment 4.9

- 3.1.1.1.2 Display data by operating NTDS console with operational program
- 1.3.2.2.1 Match present characteristics with defining characteristics for additional hostile aircraft

Segment 4.15

- 1.2.2.1.3 Obtain required altitude data from DRO interpretation
- 1.2.1.1 Obtain updated air return positions

Level 5

Segment 5.2

- 1.3.2.2.2 Match present characteristics with defining characteristics for additional friendly aircraft
- 3.1.1.1 Display update data on NTDS console with operational program
- 2.1.1 Determine the AIC updated data needed by the aircrew
- 4.2 Utilize appropriate vocabulary for transmission

Segment 5.3

- 1.3.2.2.2 Match present characteristics with defining characteristics for additional friendly aircraft

Segment 5.4

- 3.1.1.1 Display updated data on NTDS console with operational program
- 2.1.1 Determine the AIC updated data needed by the aircrew
- 4.2 Utilize appropriate vocabulary for transmission

Segment 5.5

- 3.1.1.1.2.1.2 Display target track and ground speed
- 3.1.1.1.2.1.3 Display target altitude information
- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 5.6

- 3.1.1.1.2.1.2 Display target track and ground speed
- 3.1.1.1.2.1.3 Display target altitude information
- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 5.7

- 2.1.1.3 Identify relevant available AIC information the aircrew does not yet have
- 4.2 Utilize appropriate vocabulary for transmission

Segment 5.8

- 2.1.1.3 Identify relevant available AIC information the
aircrew does not yet have
- 4.2 Utilize appropriate vocabulary for transmission

Level 6

Segment 6.2

- 3.3.7 Obtain required data from AIC calculations

Segment 6.3

- 1.3.1.2.4 Match characteristics with definitions for rendezvous
phase

Segment 6.4

- 1.2.1 Obtain update from PPI interpretation

Segment 6.6

- 3.1.1.1.2.2.1 Display CAP bearing and range
- 3.1.1.1 Display update data on NTDS console with operational
program
- 2.1.3 Determine the updated data needed by AIC

Segment 6.8

- 3.3.7 Obtain required data from AIC calculations

Segment 6.9

- 3.3.7 Obtain required data from AIC calculations
- 3.1.1.1.2.1.1 Display target bearing and range information
- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 7.2

- 2.1.1.3 Identify relevant available AIC information the
aircrew does not yet have
- NEW Call 'in the dark'

Segment 7.3

- 3.3.1.1 Obtain required magnetic bearing data from PPI display
interpretation
- 4.1.2 Determine if radio/telephone is the correct transmission
medium
- 4.2 Utilize appropriate vocabulary for transmission
- 4.3 Apply appropriate transmission procedures

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Segment 7.3 - continued

- 4.4.2 Send a message by manipulating radio/telephone equipment
- 3.3.2.1.1 Obtain required target range and bearing data from DRO interpretation

Segment 7.8

- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 7.9

- 3.1.1.2.1 Adjust plotting head intensity
- 3.1.1.2.2 Display radar returns on NTDS console

Segment 7.11

- 2.1.1.3 Identify relevant available AIC information the
aircrew does not yet have
- NEW Call 'in the dark'
- 3.1.1.2.1 Adjust plotting head intensity
- 3.1.1.2.2 Display radar returns on NTDS console

Segment 7.16

- 1.3.1.2.7 Match characteristics with definitions for emergency
phase

Segment 7.17

- 1.3.1.2.7 Match characteristics with definitions for emergency
phase
- 1.3.2.2.6 Match present characteristics with defining character-
istics for critical levels of CAP state/status
- 3.3.6 Obtain required data from aircrew transmissions
- 3.1.1.1.2.2.2 Display CAP heading

Level 8

Segment 8.1

- NEW Outline operating areas/hot areas
- NEW Provide heading advisories for area control

Segment 8.2

- 2.1.1 Determine the AIC updated data needed by the aircrew
- 3.1.1.1.2 Display data by operating NTDS console with operational
program
- NEW Turn bogey for intercept

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Segment 8.4

- 2.1.1 Determine the AIC updated data needed by the aircrew
- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 8.5

- 1.3.1.2.10 Match characteristics with definitions for simulated tactical phases
- 3.1.1.1.1.8 Preset the displayed area
- 1.2.2.2.1.12 Obtain required bank angle data from DRO interpretation

Segment 8.6

- 1.2.4.1 Request state/status R/T report
- 1.2.4.2 Obtain state/status R/T report
- 1.2.1.1 Obtain updated air return positions
- 3.2.1.1 Update target symbol (if needed)
- 2.1.1 Determine the AIC updated data needed by the aircrew
- 4.4.2 Send a message by manipulating radio/telephone equipment

Segment 8.7

- NEW Establish lost communications protocol

Segment 8.8

- NEW Detach wingman for separation

Segment 8.11

- 3.3.2.2.13 Obtain required angle-off data from DRO interpretation
- 3.3.7 Obtain required data from AIC calculations

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